

[54] **MEDICAL AND SURGICAL IMPLEMENT DETECTION SYSTEM**

[75] Inventor: Michael Allen Abels, Miami, Fla.

[73] Assignee: Micro Tec Instrumentation, Inc., Miami, Fla.

[21] Appl. No.: 712,883

[22] Filed: Aug. 9, 1976

[51] Int. Cl.² A61B 19/00

[52] U.S. Cl. 128/1 R; 128/296; 128/303 R

[58] Field of Search 128/1 R, 2 P, 2.05 E, 128/296, 303; 340/258 B

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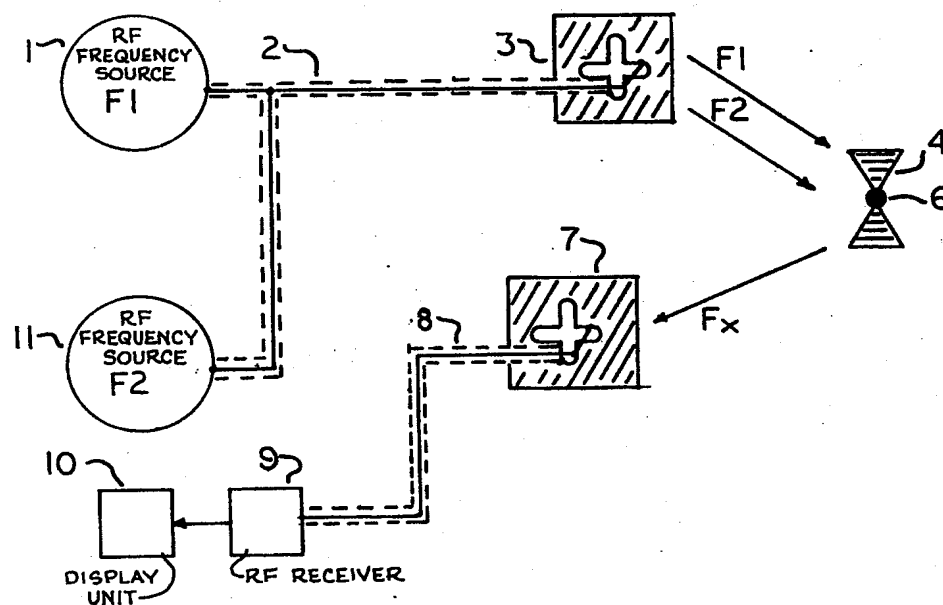
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Primary Examiner—Kyle L. Howell

[57] **ABSTRACT**

A method by which surgical implements, surgical instruments, surgical sponges, surgical implantable devices and indwelling therapeutic devices and materials may be detected within the human body or other area of interest by incorporating or adding a radiofrequency transponder. Non-linear mixing of two frequencies in a radiofrequency transponder is used. The transponder may be a small film deposition of Ferrite material exhibiting gyro-magnetic resonance at selected frequencies or a solid state device.

1 Claim, 9 Drawing Figures





US005190059A

United States Patent [19]

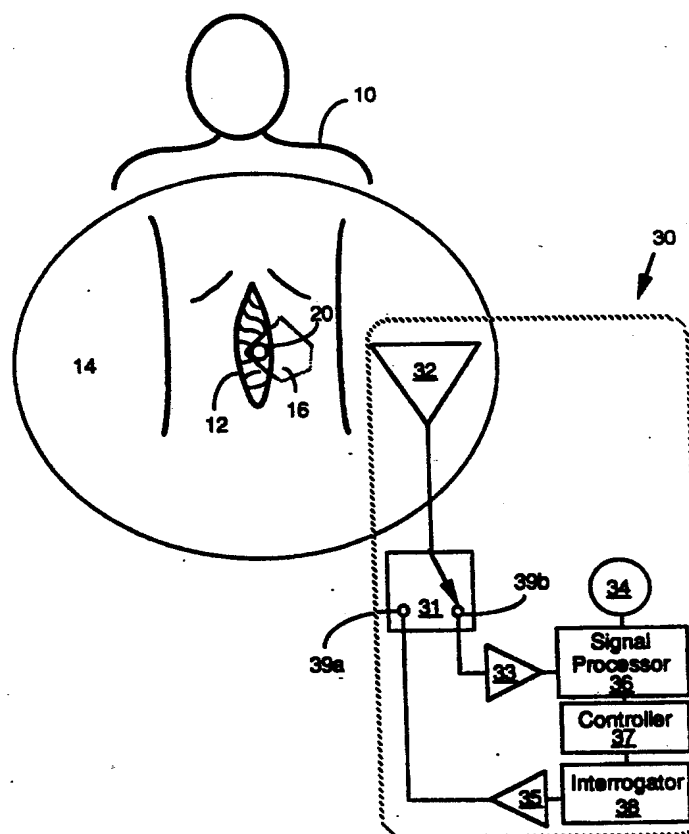
Fabian et al.

[11] **Patent Number:** **5,190,059**[45] **Date of Patent:** * **Mar. 2, 1993**[54] **SURGICAL IMPLEMENT DETECTOR
UTILIZING A POWERED MARKER**[76] **Inventors:** Carl E. Fabian, 577 NE. 96th St.,
Miami Shores, Fla. 33138; Philip M.
Anderson, Madison, N.J. 07940[*] **Notice:** The portion of the term of this patent
subsequent to Apr. 28, 2009 has been
disclaimed.[21] **Appl. No.:** **857,221**[22] **Filed:** **Mar. 25, 1992****Related U.S. Application Data**[63] Continuation of Ser. No. 698,199, May 6, 1991, Pat.
No. 5,107,862, which is a continuation of Ser. No.
437,184, Nov. 16, 1989, abandoned.[51] **Int. Cl.³** **A61B 19/00**[52] **U.S. Cl.** **128/899; 128/903;**
604/362; 606/1[58] **Field of Search** **128/631, 654, 899, 903;**
600/12, 13, 20; 606/1; 604/362[56] **References Cited****U.S. PATENT DOCUMENTS**

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5,107,862 4/1992 Fabian et al. 128/899**Primary Examiner**—Lee S. Cohen**Assistant Examiner**—Kevin Pontius**Attorney, Agent, or Firm**—Ernest D. Buff[57] **ABSTRACT**

An apparatus for detecting a surgical implement in human or animal tissue has structure for defining a transmitting zone encompassing a surgical wound in the tissue. A battery powered marker is secured to a surgical implement positioned within the wound. Field generating structure is provided for generating within the transmitting zone an electromagnetic field having a predetermined frequency band. A signal generator generates a signal having a predetermined frequency band. The signal generator is operative to cause the field generating structure to generate the electromagnetic field, providing the marker with signal identity. A detector having an antenna located within the transmitting zone of the marker detects the marker signal irrespective of the marker's orientation therewithin.

5 Claims, 8 Drawing Sheets



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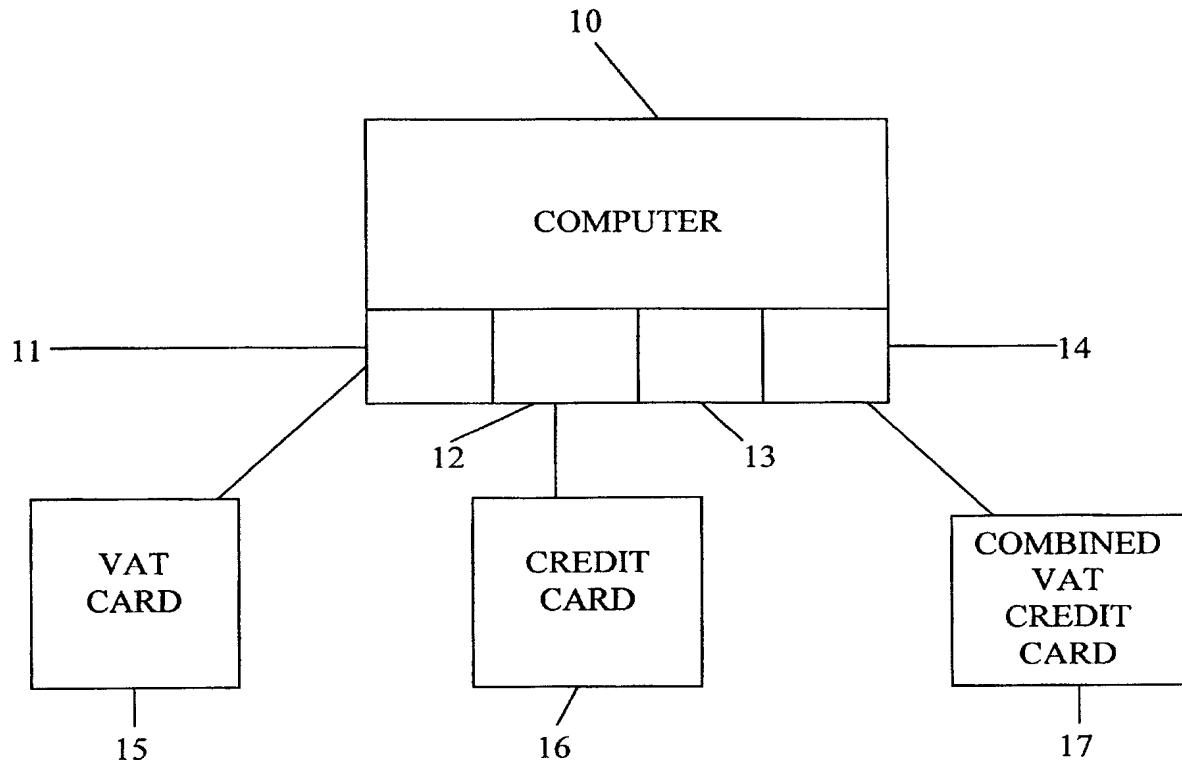
United States Patent [19][11] **Patent Number:** **5,903,876****Hagemier**[45] **Date of Patent:** **May 11, 1999**[54] **METHOD OF REFUNDING VALUE ADDED TAX**[75] Inventor: **Robert C. Hagemier**, Indianapolis, Ind.[73] Assignee: **VA-T-en, L.L.C., A Limited**,
Indianapolis[21] Appl. No.: **08/976,106**[22] Filed: **Nov. 21, 1997**[51] **Int. Cl.⁶** **G06F 19/00**[52] **U.S. Cl.** **705/19; 705/17; 705/16;**
705/31[58] **Field of Search** 705/19, 17, 16,
705/31[56] **References Cited****PUBLICATIONS**Barnes, Marcia "Get the VAT Back, Jack" Forbes. v135,
p219(2), May 20, 1985."Cash VAT Refunds Take Off with EFTS" Unix News p. 61,
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Munn, Felicity, "Ducking value-added taxes is worth it in Europe" Windsor Star, Final ED, P D6, Apr. 23, 1994.

"VAT Refunds: How to get them" Travel Agent Europe Supplement p 1, Aug. 26, 1996.

Primary Examiner—Allen R. MacDonald*Assistant Examiner*—Penny Caudle*Attorney, Agent, or Firm*—Woodard, Emhardt, Naughton
Moriarty & McNett[57] **ABSTRACT**

A value added tax card to be used in expediting refund of value added tax on purchases. The method of refunding includes establishing computerized personal accounts and associated value added tax cards. Each personal account and value added tax card has associated therewith the purchaser's name, address, country of residence and passport number. A photograph of the purchaser appears on the value added tax card. The card is presented at the time of purchase to the seller who then sends the credit to the computerized personal account equal to the charged value added tax.

11 Claims, 2 Drawing Sheets



US005931824A

United States Patent [19]**Stewart et al.**[11] **Patent Number:** **5,931,824**[45] **Date of Patent:** **Aug. 3, 1999**[54] **IDENTIFICATION AND ACCOUNTABILITY
SYSTEM FOR SURGICAL SPONGES**[76] Inventors: **William W. Stewart**, 426 N. Foy's Rd.,
Kalispell, Mont. 59901; **Brian E.
Stewart**, 11982 Kiowa 306, Los
Angeles, Calif. 90049[21] Appl. No.: **08/921,430**[22] Filed: **Aug. 29, 1997****Related U.S. Application Data**

[60] Provisional application No. 60/025,629, Sep. 4, 1996.

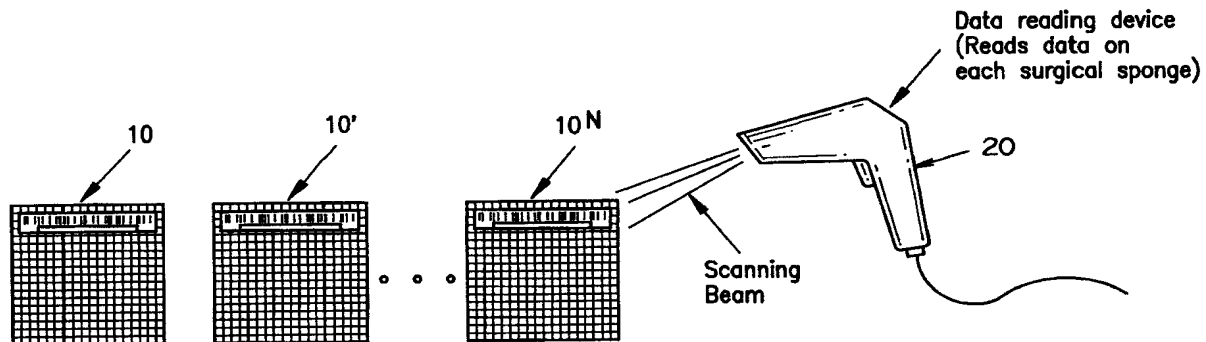
[51] **Int. Cl.⁶** **A61F 13/15; A61F 13/20**[52] **U.S. Cl.** **604/358; 604/362**[58] **Field of Search** 604/358, 362,
604/385.1**References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Mark O. Polutta[57] **ABSTRACT**

An automatic identification system for accounting for and identifying a plurality of surgical sponges used during a surgical procedure. Machine-readable information is located on a plurality of surgical sponges. Each sponge of the plurality of surgical sponges has unique machine-readable information located thereon. The unique machine-readable information is unique for at least one surgical procedure.

28 Claims, 2 Drawing Sheets

United States Patent [19]

Huang et al.

[11] Patent Number: **5,953,707**
 [45] Date of Patent: **Sep. 14, 1999**

- [54] **DECISION SUPPORT SYSTEM FOR THE MANAGEMENT OF AN AGILE SUPPLY CHAIN**
- [75] Inventors: **Ying Huang**, Yorktown Heights; **Ramakrishna Desiraju**, North Tarrytown; **Christophe Begue**, White Plains; **Omer Bakkalbasi**, Mahopac; **Lap Mui Ann Chan**, Ossining; **Krishnakumar Bhaskaran**, Tarrytown; **Awi Federgruen**, Holliswood; **Raymond J. Krasinski**, Suffern; **Peter Boey**, Scarborough, all of N.Y.

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Primary Examiner—Allen R. MacDonald
Assistant Examiner—Michele Stuckey Crecca
Attorney, Agent, or Firm—Gregory L. Thorne

- [73] Assignee: **Philips Electronics North America Corporation**, New York, N.Y.

[21] Appl. No.: **08/802,961**

[22] Filed: **Feb. 21, 1997**

Related U.S. Application Data

- [60] Provisional application No. 60/012,327, Feb. 27, 1996, provisional application No. 60/022,787, Jul. 30, 1996, provisional application No. 60/008,101, Oct. 30, 1995, and provisional application No. 60/005,860, Oct. 26, 1995.
- [51] Int. Cl.⁶ **G06F 17/60**
- [52] U.S. Cl. **705/10; 705/1; 705/7; 706/925**
- [58] Field of Search **705/10, 7, 8, 1; 706/925, 926**

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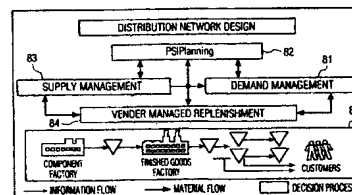
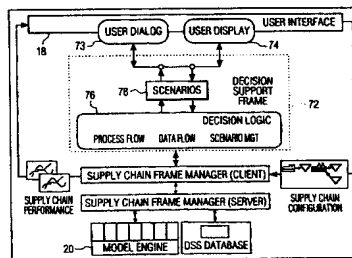
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[57] ABSTRACT

A decision support system for the management of an agile supply chain that provides an architecture including a server side and a client side. The server side includes a decision support system database that interfaces with a model engine that performs analysis of the data to support planning decisions. The server side includes a server manager that coordinates requests for service and information. The client side includes decision frames that present the various view points available in the system to the users. A frame manager coordinates the requests from decision support frames to access the needed data and models. The decision support frames provide a view into the supply chain and integrate analytical models responsive to the view point of a business process such as demand management. The frames include a supply management frame, a demand management frame, a vendor managed replenishment frame, a Planning, Sales and Inventory planning frame, and a distribution network design frame. The frame manager includes a system integrator and a functional integrator. A database management system manages the supply and maintenance of information needed by the modeling processes through the frame manager. A domain management process limits data available to said frame responsive to a user selection. The system also includes a demand and supply reconciliation process; a capacity planning process; a vendor managed replenishment process; and a scenario management process.

19 Claims, 58 Drawing Sheets





US005961572A

United States Patent [19]**Craport et al.**[11] **Patent Number:** **5,961,572**[45] **Date of Patent:** **Oct. 5, 1999**

[54] **SYSTEM AND METHOD FOR IDENTIFYING THE GEOGRAPHIC REGION OF A GEOGRAPHIC AREA WHICH CONTAINS A GEOGRAPHIC POINT ASSOCIATED WITH A LOCATION**

[75] **Inventors:** **William N. Craport**, Norcross; **Bruce C. Winters**, Lawrenceville, both of Ga.

[73] **Assignee:** **Bellsouth Intellectual Property Corporation**, Wilmington, Del.

[21] **Appl. No.:** **08/831,023**

[22] **Filed:** **Apr. 1, 1997**

[51] **Int. Cl.⁶** **G06G 7/78**

[52] **U.S. Cl.** **701/207; 701/208; 701/202; 702/150; 342/457; 342/357; 340/990; 340/995**

[58] **Field of Search** **701/200, 207, 701/208, 209, 210, 211, 201, 202; 340/988, 990, 995; 73/178 R; 342/451, 452, 457, 357; 702/150; 455/422, 429**

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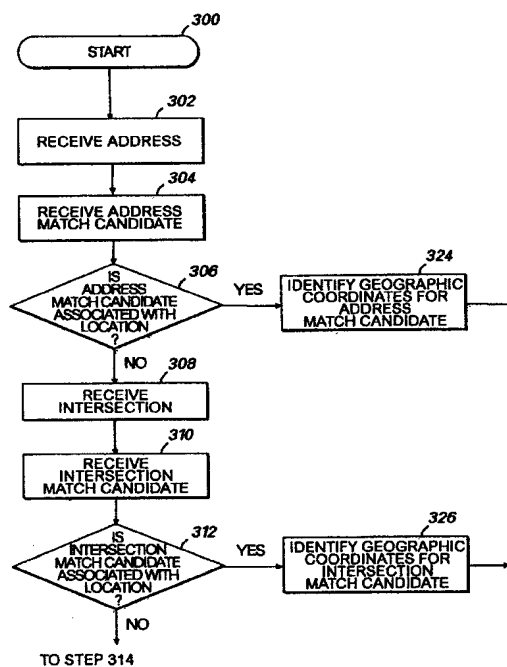
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Primary Examiner—Jacques H. Louis-Jacques
Attorney, Agent, or Firm—Jones & Askew, LLP

[57] **ABSTRACT**

A system and method for identifying the geographic region of a geographic area which contains a geographic point associated with a location. A description of a location such as an address, a nearby intersection, or a nearby landmark, is used to determine geographic coordinates for a geographic point associated with the location. To identify the geographic region which contains the geographic point, one of the plurality of geographic regions in a geographic area is selected as a selected region and a determination is made as to whether the geographic point is located within the selected region. If the geographic point is located within the selected region, then the geographic region is identified. Different preferred methods correspond to different methods for making a determination as to whether the geographic point is located within the selected region. In the preferred methods, the determination is made by drawing a line of predetermined slope through the geographic point and through the selected region and comparing the geographic point to the intersection points between the line and the boundary of the selected region. Some of the preferred methods use estimated geographic regions.

51 Claims, 12 Drawing Sheets



- [54] **METHOD OF REFUNDING VALUE ADDED TAX**
- [75] Inventor: **Robert C. Hagemier**, Indianapolis, Ind.
- [73] Assignee: **Va-T-en, L.L.C.**, Indianapolis, Ind.
- [*] Notice: This patent is subject to a terminal disclaimer.
- [21] Appl. No.: **09/264,440**
- [22] Filed: **Mar. 8, 1999**

Related U.S. Application Data

- [63] Continuation-in-part of application No. 08/976,106, Nov. 21, 1997, Pat. No. 5,903,876.
- [51] **Int. Cl.⁶** **G06F 19/00**
- [52] **U.S. Cl.** **705/19; 705/16; 705/31**
- [58] **Field of Search** **705/19, 17, 16, 705/31**

[56] **References Cited**
PUBLICATIONS

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"Cash VAT Refunds Take Off with EFTS" Unix News p. 61, Nov. 1991.

Munn, Felicity, "Ducking value-added taxes is worth it in Europe" Windsor Star, Final ED, P D6, Apr. 23, 1994.

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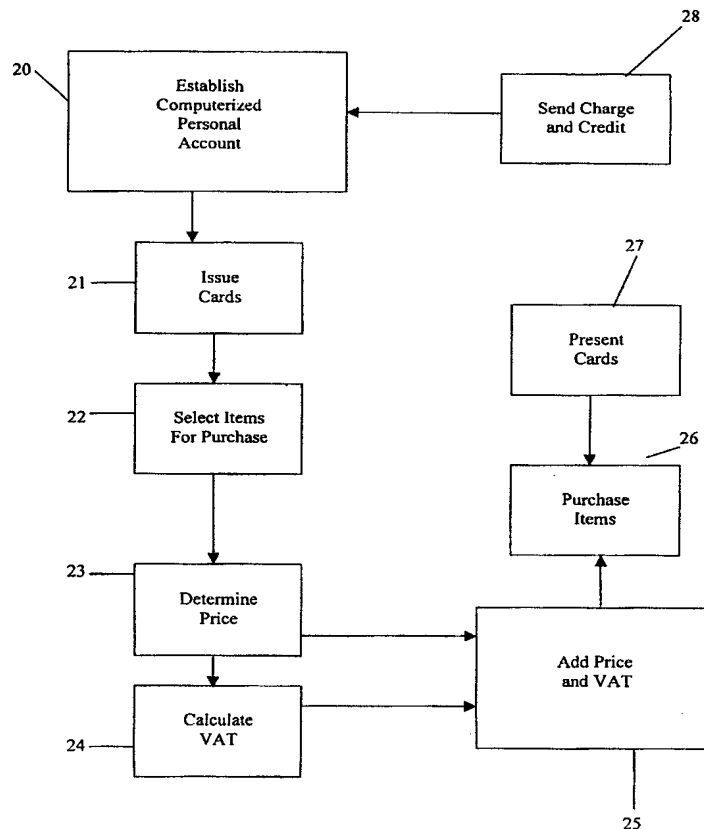
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Primary Examiner—Allen R. MacDonald
Assistant Examiner—Penny Caudle
Attorney, Agent, or Firm—Woodard, Emhardt, Naughton, Moriarty & McNett

[57] **ABSTRACT**

A value added tax card to be used in expediting refund of value added tax on purchases. The method of refunding includes establishing computerized personal accounts and associated value added tax cards. Each personal account and value added tax card has associated therewith the purchaser's name, address, country of residence and passport number. A photograph of the purchaser appears on the value added tax card. The card is presented at the time of purchase to the seller who then sends the credit to the computerized personal account equal to the charged value added tax.

5 Claims, 2 Drawing Sheets



[54] SURGICAL DEVICES AND THEIR LOCATION

[75] Inventors: Mark England, Milton; Andrew Nicholas Dames, Cambridge; Michael David Crossfield, West Wickham, all of United Kingdom

[73] Assignee: Flying Null Limited, Harston, United Kingdom

[21] Appl. No.: 08/937,563

[22] Filed: Sep. 25, 1997

[30] Foreign Application Priority Data

Aug. 19, 1997 [GB] United Kingdom 9717574

[51] Int. Cl.⁷ A61B 5/05

[52] U.S. Cl. 600/424; 128/899

[58] Field of Search 600/424, 410; 324/307, 309, 318; 128/899

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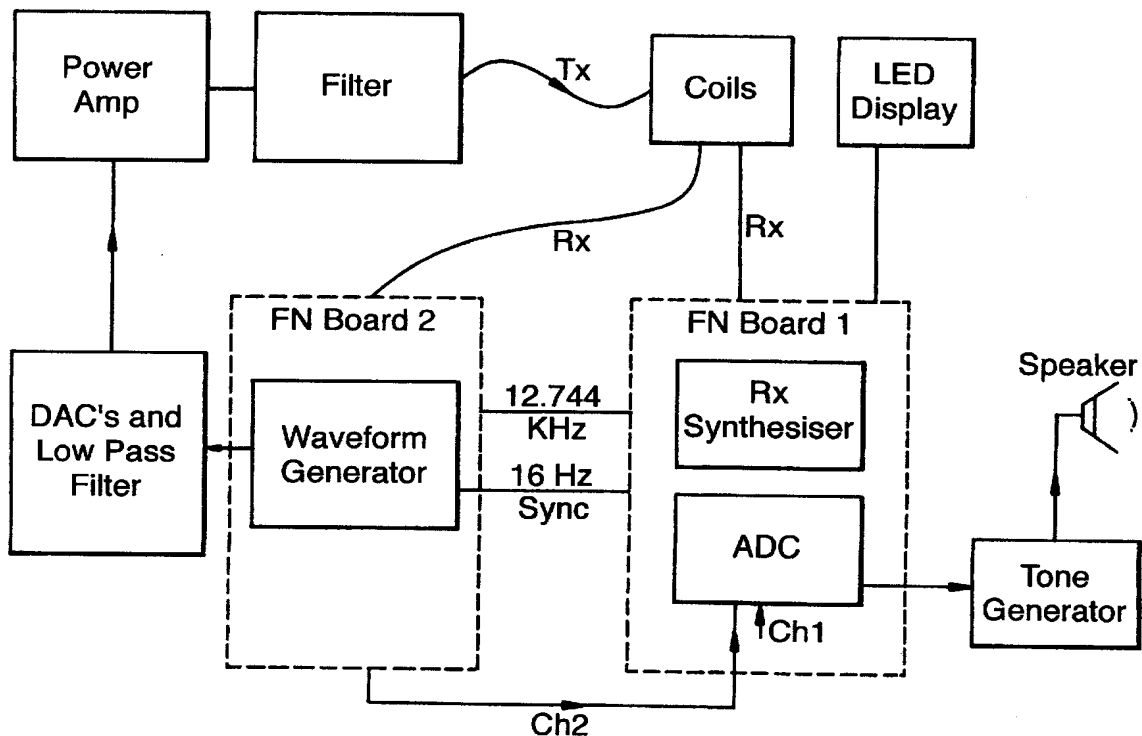
Primary Examiner—Brian L. Casler

Attorney, Agent, or Firm—Oppenheimer Wolff & Donnelly LLP

[57] ABSTRACT

A surgical device, e.g. a catheter or a prosthesis, is disclosed which is characterised in that it carries, at a predetermined location, a tag formed of a high permeability, low coercivity magnetic material. Also disclosed is a method of locating a surgical device within the human or animal body, which comprises inserting the device into the body together with a magnetically active marker, the marker being associated with a predetermined location on the surgical device; and sensing the position of the marker, and hence of the surgical device, by remotely detecting its magnetic response to an interrogating signal. Systems for use in this method are also disclosed.

15 Claims, 3 Drawing Sheets



United States Patent [19]

Francisco et al.

[11] **Patent Number:** **6,078,899**[45] **Date of Patent:** ***Jun. 20, 2000**[54] **POINT OF SALE TAX REPORTING AND
AUTOMATIC COLLECTION SYSTEM WITH
TAX REGISTER**[76] Inventors: **Paul A. Francisco**, 101 Norwood Ave.,
Loch Arbour, N.J. 07711; **Frederick J.
Petschauer**, 402 10th Ave., Belmar,
N.J. 07719[*] Notice: This patent is subject to a terminal dis-
claimer.[21] Appl. No.: **09/139,265**[22] Filed: **Aug. 25, 1998****Related U.S. Application Data**[63] Continuation of application No. 08/438,890, May 10, 1995,
Pat. No. 5,799,283.[51] Int. Cl.⁷ **G06F 17/60**[52] U.S. Cl. **705/19; 705/31; 705/16**[58] Field of Search **705/19, 31, 16**[56] **References Cited****U.S. PATENT DOCUMENTS**

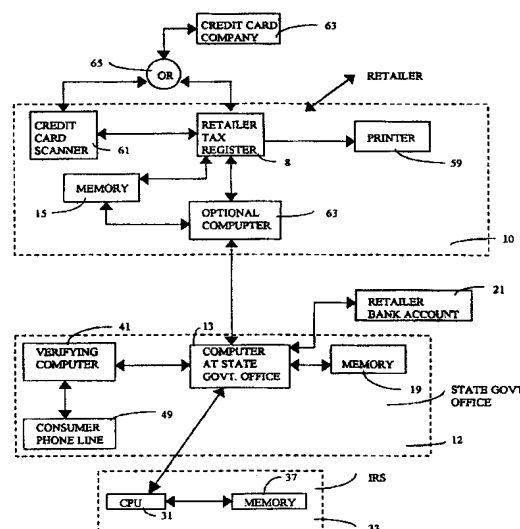
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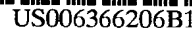
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Primary Examiner—Allen R. MacDonald
Assistant Examiner—Ahiba Robinson-Boyce
Attorney, Agent, or Firm—Nixon & Vanderhye P.C.

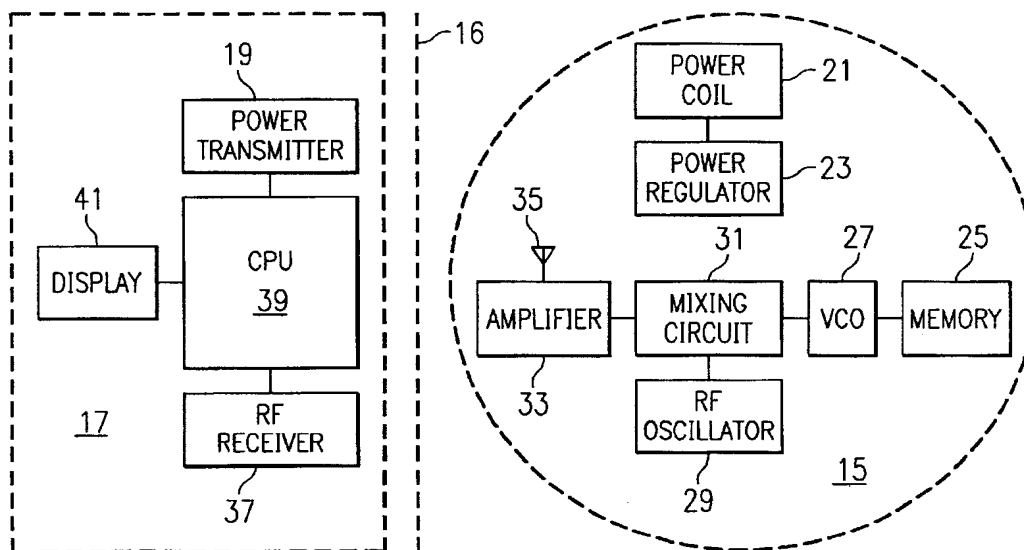
[57] **ABSTRACT**

A point of sale tax reporting and automatic collection system including a smart tax register located at a retailer location. The retailer smart register processes consumer transactions and calculates the amount of sales tax due the retailer by the consumer for each transaction. Following the transaction, the consumer requests and is give a tax paid receipt. After the sales tax is paid to the retailer by the consumer, the register either immediately or periodically forwards the amount of the transaction and the amount of sales tax collected by the retailer to a computer and memory located at a remote location (e.g. state government taxing authority). The computer and memory receive and store the retailer's transaction and sales tax information, and report same to the Internal Revenue Service at least once a year. After receiving the retailer's sales tax information, the computer accesses and debits an account belonging to the retailer, the amount debited corresponding to the amount of sales tax collected by the retailer. In sum, the system automatically reports all retailer transactions and sales tax collected by retailers from consumers to local and federal government authorities and then automatically collects the sales tax amounts from retailer accounts so as to prevent retailers from turning over the collected sales tax. A tax paid receipt is given to each consumer as evidence that the tax paid will be turned over to the proper authorities.

17 Claims, 6 Drawing Sheets



(10) **Patent No.:** **US 6,366,206 B1**
(45) **Date of Patent:** **Apr. 2, 2002**

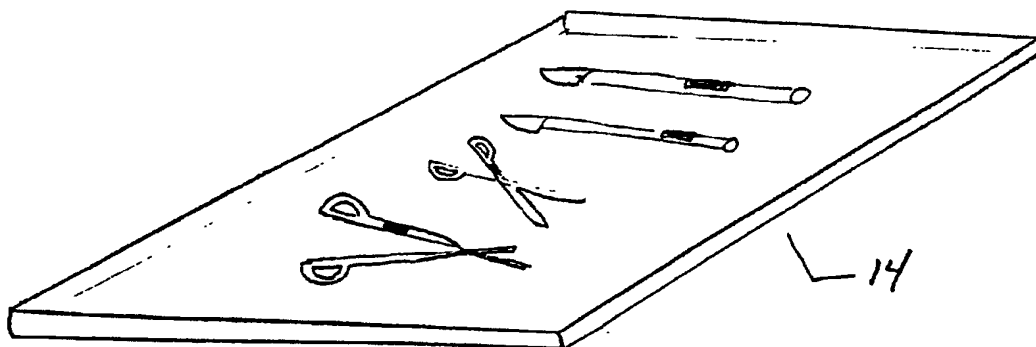
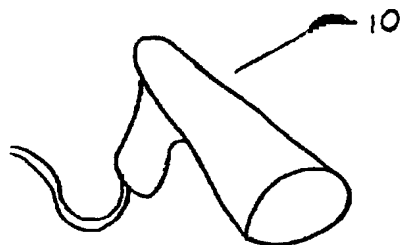




US 20020067263A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0067263 A1**
Tafoya et al. (43) **Pub. Date: Jun. 6, 2002**(54) **METHOD OF PERFORMING AN
INVENTORY OF MEDICAL INSTRUMENTS**(76) Inventors: **Benedict J. Tafoya**, Charlestown, MA
(US); **Albert C. Flanders**, Charlestown,
MA (US)Correspondence Address:
Anthony M. Lorusso
LORUSSO & LOUD
440 Commercial Street
Boston, MA 02109 (US)(21) Appl. No.: **09/738,278**(22) Filed: **Dec. 13, 2000****Related U.S. Application Data**(63) Non-provisional of provisional application No.
60/170,339, filed on Dec. 13, 1999.**Publication Classification**(51) Int. Cl.⁷ **G08B 13/14**(52) U.S. Cl. **340/572.1; 340/10.1; 340/825.36;
340/825.49**(57) **ABSTRACT**

A method of tracking medical surgical instruments using encoded radio frequency tags incorporated in labels which are affixed to each instrument. A database of instruments is maintained at a hospital which may contain identification and status information for each instrument. A standard data format is used in the tags to provide a universal inventory system for medical institutions, medical instrument manufacturers and service companies. The tags may be instantly identified by a microprocessor system having a radio frequency scanner. The scanner may optionally write data to a radio frequency tag. A method of accounting for instruments used in a surgical procedure by performing an electronic radio frequency scanning inventory before a procedure and again before a surgical cavity is closed.





US006400272B1

(12) **United States Patent**
Holtzman et al.

(10) **Patent No.:** **US 6,400,272 B1**
(45) **Date of Patent:** **Jun. 4, 2002**

(54) **WIRELESS TRANSCEIVER FOR
COMMUNICATING WITH TAGS**

(75) Inventors: **Henry N. Holtzman**, West Roxbury,
MA (US); **Jeff Mock**, San Francisco,
CA (US)

(73) Assignee: **Presto Technologies, Inc.**, Cambridge,
MA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/539,768**

(22) Filed: **Mar. 31, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/127,329, filed on Apr. 1,
1999, and provisional application No. 60/144,145, filed on
Jul. 16, 1999.

(51) Int. Cl.⁷ **G08B 13/14**

(52) U.S. Cl. **340/572.1; 361/56**

(58) Field of Search **340/572.1, 572.2,
340/572.3, 572.4, 551; 361/56**

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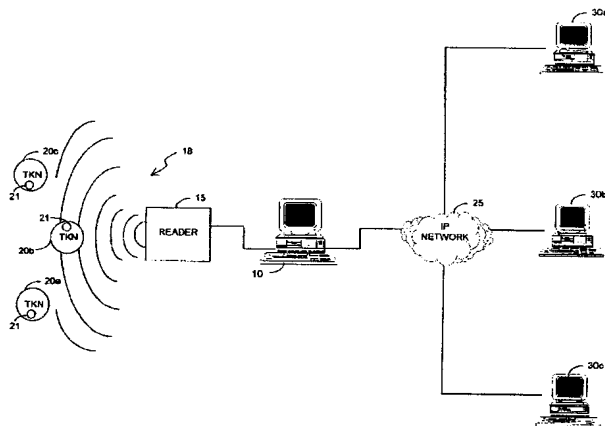
Primary Examiner—John A. Tweel, Jr.

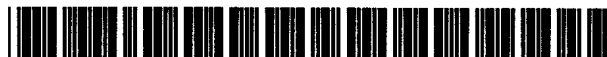
(74) *Attorney, Agent, or Firm*—Testa, Hurwitz & Thibault,
LLP

(57) **ABSTRACT**

In general, in one aspect, the invention features a system and method for communicating with a RFID tag. The method includes receiving a signal from a RFID tag, and identifying the tag type from the RFID tag signal. In another aspect, the invention features a system and method for communicating tag receiver to a computer, and transmitting a receiver identifier from the tag information. The method includes transmitting tag information from a tag receiver to a computer.

23 Claims, 7 Drawing Sheets





US006424262B2

(12) **United States Patent**
Garber et al.

(10) **Patent No.:** **US 6,424,262 B2**

(45) **Date of Patent:** **Jul. 23, 2002**

(54) **APPLICATIONS FOR RADIO FREQUENCY IDENTIFICATION SYSTEMS**

3,752,960 A 8/1973 Walton 235/61
3,790,945 A 2/1974 Fearon 340/572.2

(75) Inventors: **Sharon R. Garber**, Crystal; **Bernard A. Gonzalez**, St. Paul; **Mitchell B. Grunes**, Minneapolis; **Richard H. Jackson**, Inver Grove Heights; **Gerald L. Karel**, Maplewood; **John M. Kruse**, Minneapolis; **Richard W. Lindahl**, Oakdale; **James E. Nash**, Bloomington; **Chester Plotrowski**, White Bear Lake; **John D. Yorkovich**, Maplewood, all of MN (US)

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(73) Assignee: **3M Innovative Properties Company**, St. Paul, MN (US)

Picayune Times, "Tammany Libraries turn page on Old-Fashioned Checkout" (3M SelfCheck System), Aug. 25, 1995.*

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 12 days.

Finkenzeller; "RFID Handbook—Radio-Frequency Identification Fundamentals and Applications"; 1999; pp. 227–273.

(21) Appl. No.: **09/804,923**

Flyer entitled "Combined Anti-Theft and RF Programmable Tag" from ISD (RF/ID) Ltd.

(22) Filed: **Mar. 13, 2001**

John Bowers; "Road to intelligent tagging is paved with opportunities"; Automatic I.D. News; Oct. 1995; pp. 86–87.

Related U.S. Application Data

(60) Division of application No. 09/619,220, filed on Jul. 19, 2000, which is a division of application No. 09/368,826, filed on Aug. 5, 1999, now Pat. No. 6,232,870, which is a continuation-in-part of application No. 09/344,758, filed on Jun. 25, 1999, now abandoned, which is a continuation-in-part of application No. 09/134,686, filed on Aug. 14, 1998, now abandoned.

Primary Examiner—Thomas Mullen

(74) *Attorney, Agent, or Firm*—Peter L. Olson

(51) **Int. Cl.⁷** **G08B 13/14**

(52) **U.S. Cl.** **340/572.3; 335/284**

(58) **Field of Search** 340/572.3, 572.1, 340/5.2, 5.8; 335/284

(57)

ABSTRACT

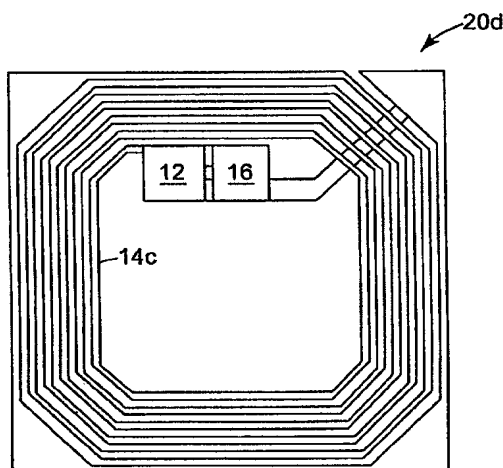
The present invention relates to RFID devices, including handheld RFID devices, and applications for such devices. The devices and applications may be used in connection with items that are associated with an RFID tag, and optionally a magnetic security element. The devices and applications are described with particular reference to library materials such as books, periodicals, and magnetic and optical media.

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13 Claims, 10 Drawing Sheets





US006438528B1

(12) United States Patent
Jensen et al.**(10) Patent No.: US 6,438,528 B1**
(45) Date of Patent: *Aug. 20, 2002**(54) TRANSACTION MANAGER SUPPORTING A MULTI-CURRENCY ENVIRONMENT****(75) Inventors:** Jan Sander Jensen, Lyngby; Henriette Joost, Koebenhavn OE; Martin Schroeder, Maaloev, all of (DK)**(73) Assignee:** International Business Machines Corporation, Armonk, NY (US)**(*) Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/092,927**(22) Filed:** Jun. 5, 1998**(30) Foreign Application Priority Data**

Oct. 28, 1997 (GB) 9722609

(51) Int. Cl.⁷ G06F 17/60**(52) U.S. Cl.** 705/44; 705/26; 709/105; 709/106; 709/101**(58) Field of Search** 705/44, 19, 10; 395/200, 600; 706/10, 49; 709/101, 105, 106, 230, 318**(56) References Cited****U.S. PATENT DOCUMENTS**5,329,619 A * 7/1994 Page et al. 395/200
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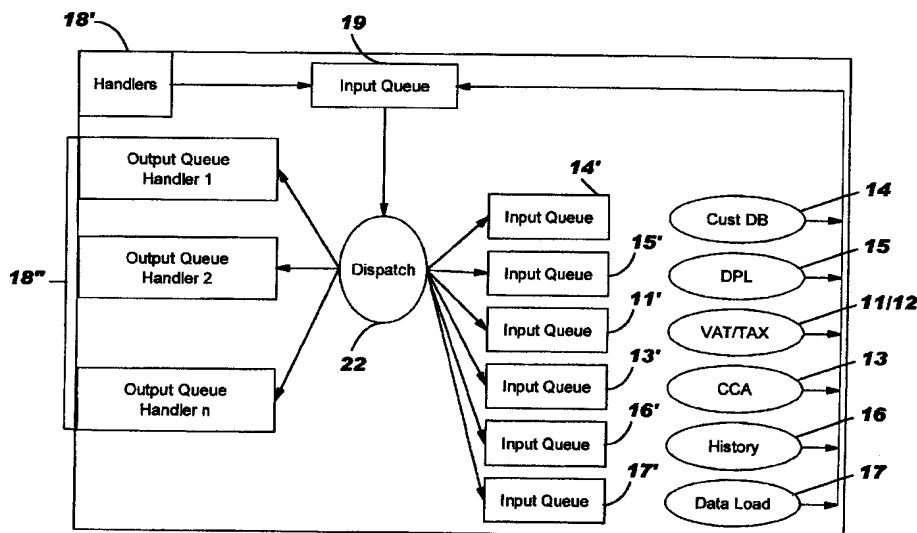
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Primary Examiner—Eric W. Stamber**Assistant Examiner**—Yehdega Retta**(74) Attorney, Agent, or Firm**—Jeanine S. Ray-Yarletts**(57) ABSTRACT**

A transaction manager includes a dispatcher (22) connected to an input queue (19), one or more output queues and one or more processing module queues (11' to 17'). The transaction manager includes input data handling means (18), responsive to transaction requests received from one or more clients, to place said transaction requests on said input queue. The transaction requests include a service code, indicative of the transaction type, and data specific to a transaction. The manager includes one or more processing modules (11 to 17), the or each processing module associated with a respective processing module queue and being adapted to process processing module queue entries and place any result of said processing on the input queue. The manager further includes output data handling means connected to the or each output queue for forwarding output queue entries to respective clients. The dispatcher is responsive to a service code to place a transaction request on one or more of said processing module queues, and is responsive to a result to place said result on a selected one of the or each output queue.

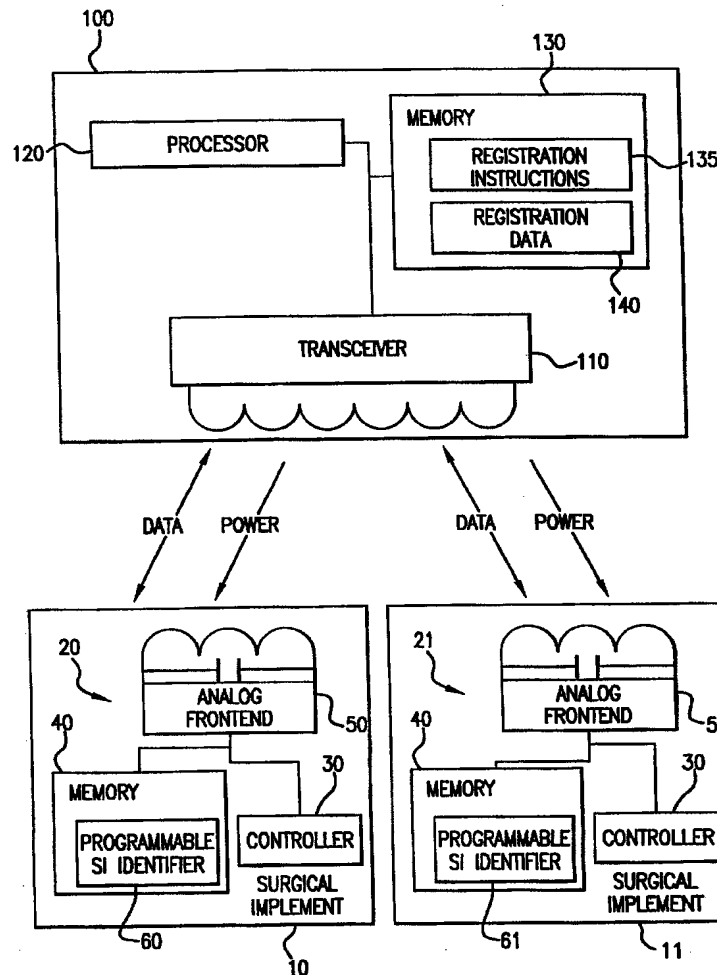
1 Claim, 3 Drawing Sheets

(19) **United States**(12) **Patent Application Publication**
Levin(10) **Pub. No.: US 2002/0143320 A1**(43) **Pub. Date: Oct. 3, 2002**(54) **TRACKING MEDICAL PRODUCTS WITH
INTEGRATED CIRCUITS****Publication Classification**(76) **Inventor: Bruce H. Levin, Marlon Station, PA
(US)**(51) **Int. Cl.⁷ A61B 17/00**(52) **U.S. Cl. 606/1**

Correspondence Address:

KENYON & KENYON**1500 K STREET, N.W., SUITE 700****WASHINGTON, DC 20005 (US)**(57) **ABSTRACT**(21) **Appl. No.: 10/106,183**(22) **Filed: Mar. 27, 2002****Related U.S. Application Data**(63) **Continuation-in-part of application No. 09/883,991,
filed on Jun. 20, 2001.**(60) **Provisional application No. 60/280,206, filed on Mar.
30, 2001.**

A system and method of tracking medical products provides for associating a group of medical products with a group location based on a group radio frequency identification (RF ID) device signal, where the group includes a first unit and a second unit. The first unit is associated with a first remote location based on a first unit RF ID device signal. The method further provides for associating the second unit with a second remote location based on a second remote location based on a second unit RF ID device signal. The signals uniquely identify the units and the group.





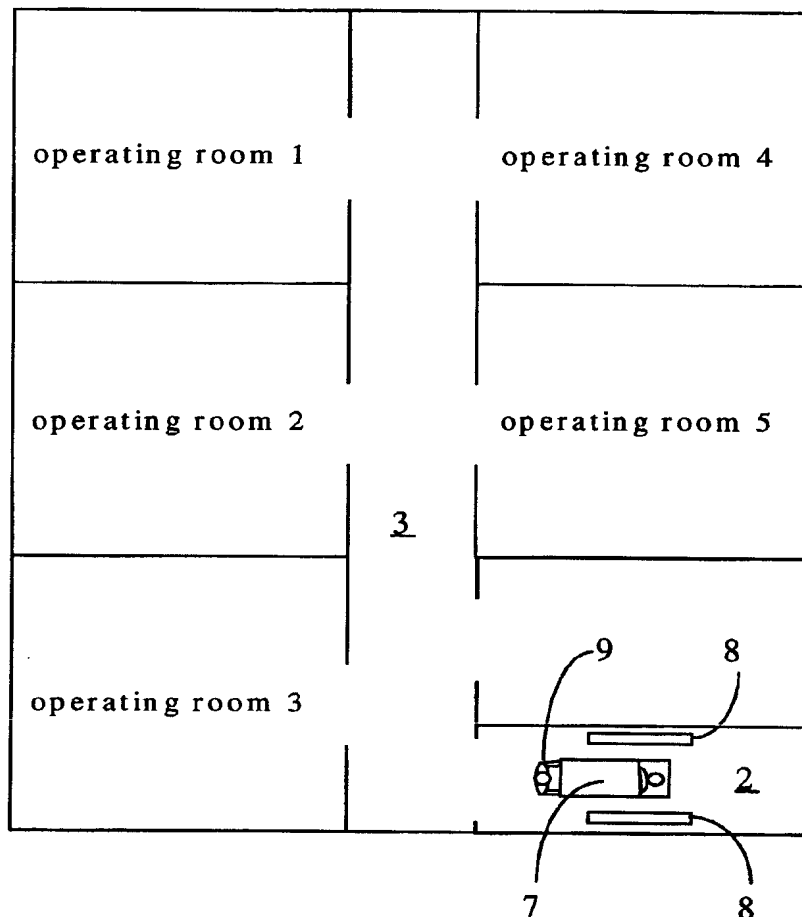
US 20030066537A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0066537 A1**
Fabian et al. (43) **Pub. Date: Apr. 10, 2003**(54) **SURGICAL IMPLEMENT DETECTION
SYSTEM****Publication Classification**(76) Inventors: **Carl E. Fabian**, Miami Shores, FL
(US); **Philip M. Anderson, III**,
Madison, NJ (US)(51) **Int. Cl.⁷** **A61B 19/00**
(52) **U.S. Cl.** **128/899**

Correspondence Address:

Ernest D. Buff**Ernest D. Buff & Associates, LLC****245 South Street****Morristown, NJ 07960 (US)**(21) Appl. No.: **10/265,555**(22) Filed: **Oct. 8, 2002****Related U.S. Application Data**(60) Provisional application No. 60/328,357, filed on Oct.
10, 2001.(57) **ABSTRACT**

Surgical implements used during an operating procedure are detected in human tissue. Markers attached to the surgical implements change their impedance at a preselected frequency in the presence of an electromagnetic field. Each of the markers is thereby provided with signal-identifying characteristics. The signal-identifying characteristics are detected outside the operating room in an accurate, reliable manner. Potential interference with operating room electronic instrumentation is avoided, the possibility of operator error is reduced and system cost and space requirements are substantially lowered.



(12) **United States Patent**
Cerra(10) **Patent No.:** US 6,546,373 B1
(45) **Date of Patent:** Apr. 8, 2003(54) **SYSTEM AND METHOD FOR RECOVERING REFUNDABLE TAXES**(75) **Inventor:** Peter J. Cerra, White Plains, NY (US)(73) **Assignee:** MasterCard International Incorporated, Purchase, NY (US)(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.(21) **Appl. No.:** 09/232,555(22) **Filed:** Jan. 18, 1999(51) **Int. Cl.⁷** G06F 17/60(52) **U.S. Cl.** 705/19; 705/39; 705/21(58) **Field of Search** 705/19, 39, 21(56) **References Cited****U.S. PATENT DOCUMENTS**

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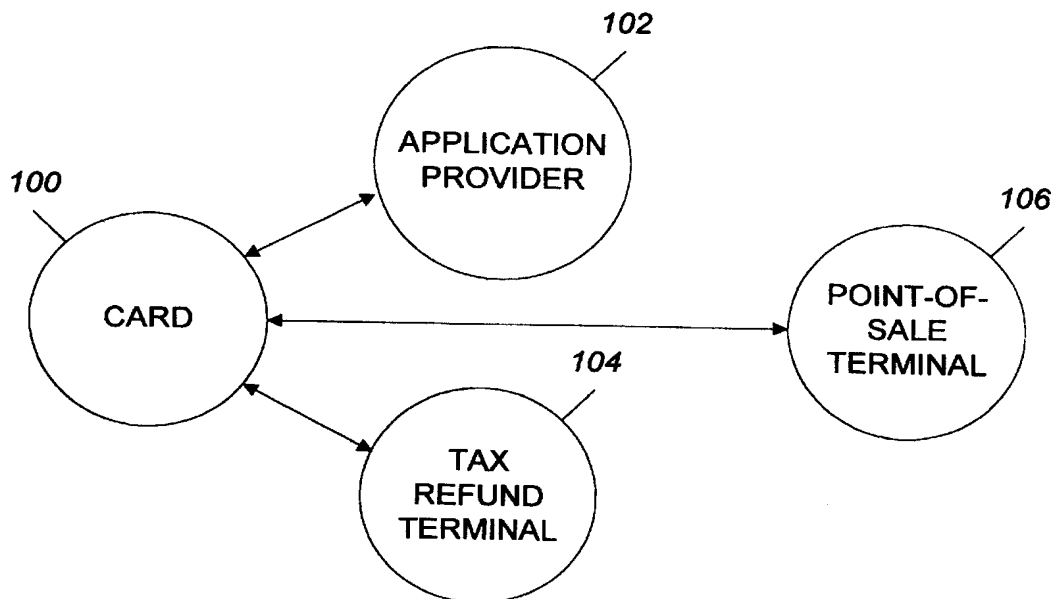
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Wade, Betsy, "V.A.T. Refunds: Vexations Added," *New York Times*, Oct. 11, 1998.

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Primary Examiner—Vincent Millin**Assistant Examiner**—Pedro R. Kanof(74) **Attorney, Agent, or Firm**—Baker Botts L.L.P.(57) **ABSTRACT**

A system for recovering refundable taxes such as value-added taxes (VAT) uses a transaction card, such as a credit or debit or electronic cash card, to record purchases made by a traveler that are subject to VAT in a foreign country. The traveler loads the transaction card with a software application that is able to record the purchases subject to VAT. The traveler uses the card to make purchases in the foreign country, and the card calculates and accumulates the VAT subject to refund. When leaving the foreign country, the traveler inserts the card into a terminal, the software application reads the VAT subject to refund, and the traveler selects whether to receive the refunded VAT in cash in local currency or in the currency of the country in which the traveler resides ("home currency"), as cash value on the card (if a cash or debit card), as a credit on the card (if a credit card), or by check in local or home currency.

20 Claims, 14 Drawing Sheets

(19) **United States**(12) **Patent Application Publication****Fabian et al.**(10) **Pub. No.: US 2003/0105394 A1**(43) **Pub. Date:****Jun. 5, 2003**(54) **PORTABLE SURGICAL IMPLEMENT
DETECTOR**

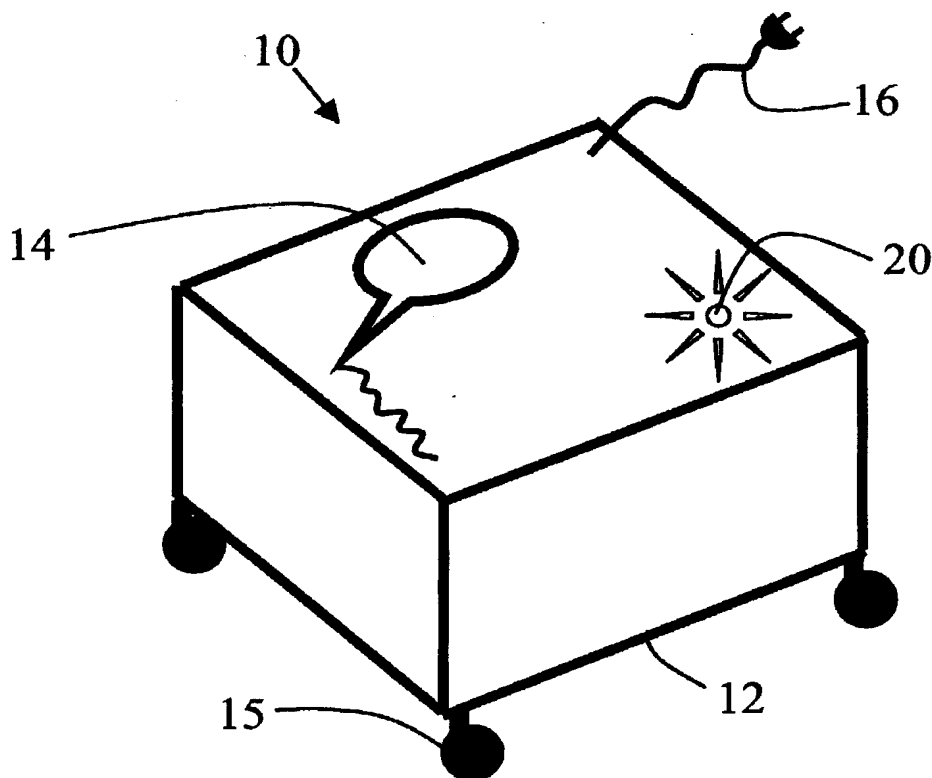
(57)

ABSTRACT(76) Inventors: **Carl R. Fabian**, Miami Shores, FL
(US); **Philip M. Anderson III**,
Madison, NJ (US)

Correspondence Address:

Ernest D. Buff**Ernest D. Buff & Associates, LLC****245 South Street****Morristown, NJ 07960 (US)**(21) Appl. No.: **10/307,029**(22) Filed: **Dec. 2, 2002****Related U.S. Application Data**(60) Provisional application No. 60/337,517, filed on Dec.
3, 2001.**Publication Classification**(51) **Int. Cl.⁷** **A61B 5/05**(52) **U.S. Cl.** **600/407**

Surgical implements used during an operating procedure are detected in human or animal tissue. Markers attached to the surgical implements change their impedance at a preselected frequency in the presence of an electromagnetic field. Each of the markers is thereby provided with signal-identifying characteristics. The signal-identifying characteristics are detected by a freely movable, portable detection unit from a first location proximate the patient in an accurate, reliable manner. Potential cross-interference with operating room electronic instrumentation is minimized by shielding. System cost and space requirements are substantially lowered. An accidentally retained surgical implement is discovered in a timely manner, prior to completion of surgery and before the patient has been removed from the operating room. The portable detection unit is adapted to be transported to a second location from which the potential cross-interference between the electrical or magnetic fields generated during operation of the detector and the electronics deployed during the surgery is minimized. The patient is interrogated after closure of the wound by being subjected to an interrogating field generated by the surgical implement detector at the second location. Visible and/or audible signals from the detector signify accidental retention of a surgical implement before the patient awakes.





US006600418B2

(12) **United States Patent**
Francis et al.

(10) **Patent No.:** **US 6,600,418 B2**
(45) **Date of Patent:** **Jul. 29, 2003**

(54) **OBJECT TRACKING AND MANAGEMENT SYSTEM AND METHOD USING RADIO-FREQUENCY IDENTIFICATION TAGS**

(75) Inventors: **Robert C. Francis**, Maplewood, MN (US); **James P. McGee**, Cedar, MN (US); **Robert A. Sainati**, Bloomington, MN (US); **Richard L. Sheehan, Jr.**, Stillwater, MN (US); **Sai-Kit K. Tong**, Roseville, MN (US)

(73) Assignee: **3M Innovative Properties Company**, St. Paul, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/735,243**

(22) Filed: **Dec. 12, 2000**

(65) **Prior Publication Data**

US 2002/0070862 A1 Jun. 13, 2002

(51) Int. Cl.⁷ **G08B 13/14**

(52) U.S. Cl. **340/572.1; 340/5.92; 340/10.1; 340/505; 700/215; 700/226; 700/229; 705/28**

(58) Field of Search **340/572.1, 505, 340/10.1, 5.92, 988; 235/385; 705/22, 28; 700/213, 214, 215, 216, 217, 225, 226, 228, 229**

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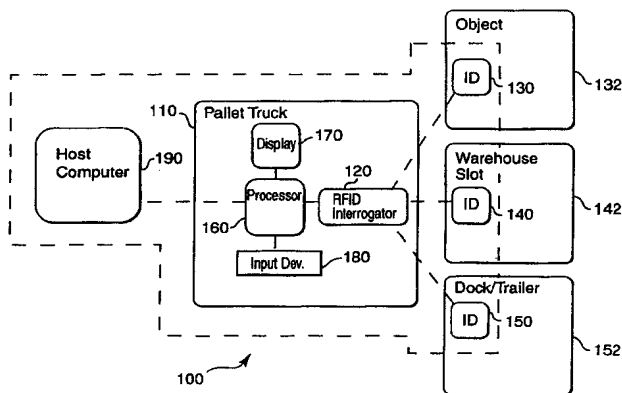
Primary Examiner—Thomas Mullen

(74) *Attorney, Agent, or Firm*—Melissa E. Buss

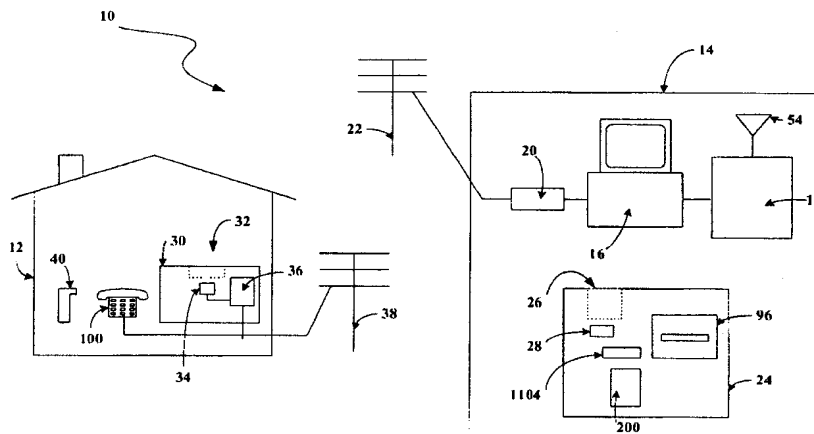
(57) **ABSTRACT**

An object tracking and management system and method using radio-frequency identification ("RFID") tags is disclosed. Objects to be moved between locations are outfitted with RFID tags having information relating to the identities of the objects. The locations are also marked by RFID tags containing information on the locations. A transport vehicle for moving the objects is equipped with an RFID interrogator capable of detecting signals from the RFID tags. An onboard processor provides the operator of the vehicle with instructions on the movement of objects. The processor also determines the identities of the objects and locations from the detected signals and provides the operator with feedback as to the identity of an object being moved, the location of the vehicle and any error in carrying out the instructions. Numerous variations of the basic system and method using RFID tags are also described.

26 Claims, 10 Drawing Sheets



(10) **Patent No.:** US 6,640,214 B1
(45) **Date of Patent:** Oct. 28, 2003



67 Claims, 32 Drawing Sheets

(12) **United States Patent**
Cybulski et al.

(10) **Patent No.:** **US 6,669,089 B2**
(45) Date of Patent: **Dec. 30, 2003**

(54) **RADIO FREQUENCY IDENTIFICATION
SYSTEMS FOR ASSET TRACKING**

- (76) **Inventors:** **Eric R. Cybulski**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Francis D. Dehn**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Robert C. Francis**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Peter B. Hogerton**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Mary C. Kallestad**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Karl M. Kropp**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **James P. McGee**, P.O. Box 33427, St. Paul, MN (US) 55133-3427; **Sai-Kit Tong**, P.O. Box 33427, St. Paul, MN (US) 55133-3427

- (*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/992,711**

(22) **Filed:** **Nov. 12, 2001**

(65) **Prior Publication Data**

US 2003/0089771 A1 May 15, 2003

- (51) **Int. Cl.⁷** **G06F 17/60**
(52) **U.S. Cl.** **235/385; 235/383; 235/384**
(58) **Field of Search** **235/383, 384, 235/385**

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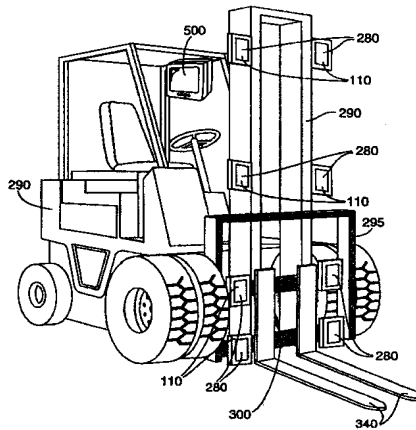
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Primary Examiner—Thien M. Le
Assistant Examiner—Daniel A. Hess
(74) **Attorney, Agent, or Firm**—Melissa E. Buss

(57) **ABSTRACT**

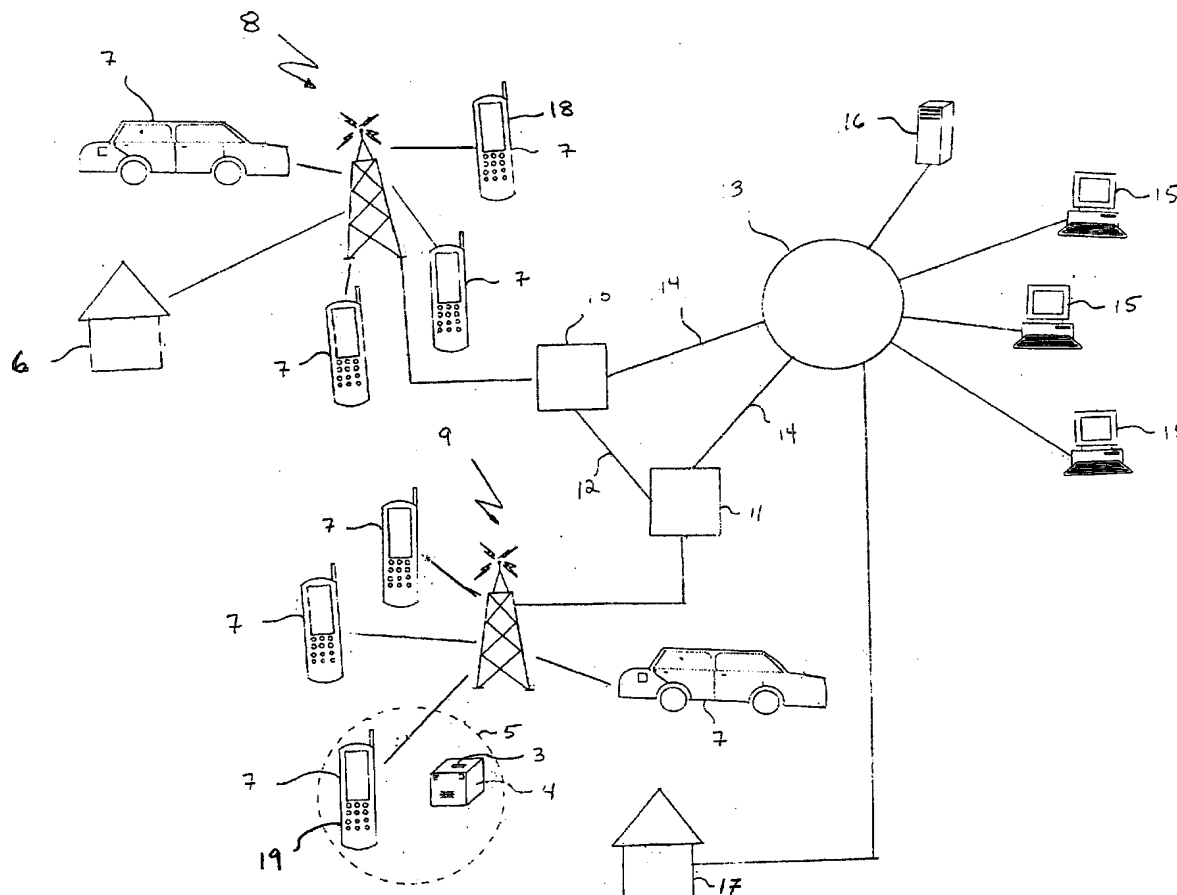
An asset tracking system is provided, having particular usefulness in connection with the interrogation of RFID-tagged pallets by a forklift equipped with one or more RFID reader antennas. A useful embodiment of an RFID-tagged pallet is described, along with other beneficial components of such a system.

24 Claims, 8 Drawing Sheets



(19) **United States**(12) **Patent Application Publication**
Kreiner et al.(10) **Pub. No.: US 2004/0084525 A1**(43) **Pub. Date: May 6, 2004**(54) **SYSTEM FOR MONITORING AND
TRACKING OBJECTS****Publication Classification**(51) **Int. Cl.⁷ G07B 15/02**(52) **U.S. Cl. 235/384**(76) **Inventors:** **Barrett Kreiner**, Norcross, GA (US);
Donna Hodges, Cumming, GA (US);
Jonathan Peterson, Atlanta, GA (US);
Andre Jarboe, Stone Mountain, GA
(US); **Monique Simmons**, Duluth, GA
(US)**Correspondence Address:****Bambi Faivre Walters****P.O. Box 5743****Williamsburg, VA 23188 (US)**(21) **Appl. No.: 10/283,120**(22) **Filed: Oct. 30, 2002**(57) **ABSTRACT**

The present invention is directed to a system that uses a plurality of monitors in combination with a plurality of identification tags attached to objects in order to track and monitor those objects. The monitors inductively couple to the identification tags to obtain identification information therefrom. In addition, each monitor is in communication with a network containing at least one database to leverage existing network capacity for increased tracking volume. The network is preferably a peer-to-peer type network to permit direct communication and data sharing among the monitors.





US006768419B2

(12) **United States Patent**
Garber et al.

(10) **Patent No.: US 6,768,419 B2**
 (45) **Date of Patent: Jul. 27, 2004**

(54) **APPLICATIONS FOR RADIO FREQUENCY IDENTIFICATION SYSTEMS**

(75) Inventors: **Sharon R. Garber**, Crystal, MN (US); **Bernard A. Gonzalez**, St. Paul, MN (US); **Mitchell B. Grunes**, Minneapolis, MN (US); **Richard H. Jackson**, Inver Grove Heights, MN (US); **Gerald L. Karel**, Maplewood, MN (US); **John M. Kruse**, Minneapolis, MN (US); **Richard W. Lindahl**, Oakdale, MN (US); **James E. Nash**, Bloomington, MN (US); **Chester Piotrowski**, White Bear Lake, MN (US); **John D. Yorkovich**, Maplewood, MN (US)

(73) Assignee: **3M Innovative Properties Company**, St. Paul, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 35 days.

(21) Appl. No.: **10/152,255**

(22) Filed: **May 20, 2002**

(65) **Prior Publication Data**

US 2002/0167406 A1 Nov. 14, 2002

Related U.S. Application Data

(60) Division of application No. 09/619,220, filed on Jul. 19, 2000, now Pat. No. 6,486,780, which is a division of application No. 09/368,826, filed on Aug. 5, 1999, now Pat. No. 6,232,870, which is a continuation-in-part of application No. 09/344,758, filed on Jun. 25, 1999, now abandoned, which is a continuation-in-part of application No. 09/134,686, filed on Aug. 14, 1998, now abandoned.

(51) Int. Cl.⁷ **G08B 13/14**

(52) U.S. Cl. **340/572.4; 235/385; 340/10.1; 340/693.1**

(58) Field of Search **340/10.1, 572.4, 340/572.3, 572.6, 572.7, 572.8, 693.1, 693.3, 505, 5.8; 235/380, 385; 705/28**

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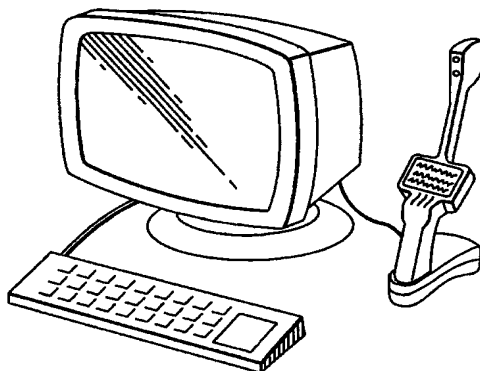
Primary Examiner—Thomas Mullen

(74) *Attorney, Agent, or Firm*—Melissa E. Buss

(57) **ABSTRACT**

The present invention relates to RFID devices, including handheld RFID devices, and applications for such devices. The devices and applications may be used in connection with items that are associated with an RFID tag, and optionally a magnetic security element. The devices and applications are described with particular reference to library materials such as books, periodicals, and magnetic and optical media.

5 Claims, 10 Drawing Sheets

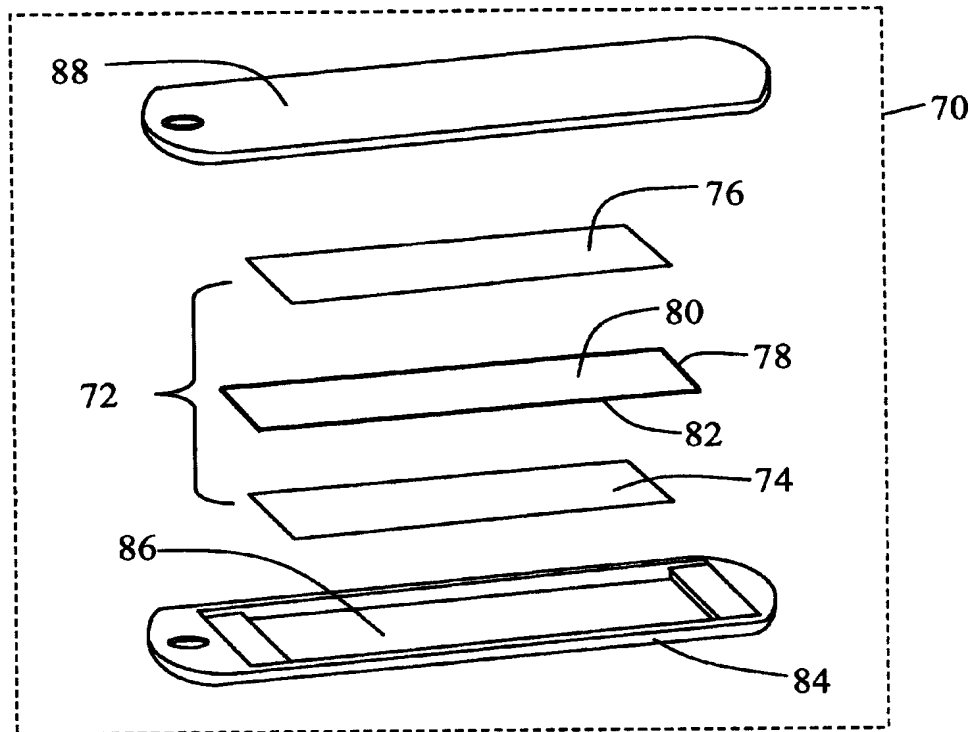




US 20040129279A1

(19) **United States**(12) **Patent Application Publication**
Fabian et al.(10) **Pub. No.: US 2004/0129279 A1**(43) **Pub. Date: Jul. 8, 2004**(54) **MINIATURE MAGNETOMECHANICAL TAG
FOR DETECTING SURGICAL SPONGES
AND IMPLEMENTS**(76) **Inventors: Carl E. Fabian, Miami, FL (US);
Philip M. Anderson III, Madison, NJ
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MORRISTOWN, NJ 07960 (US)(21) **Appl. No.: 10/723,566**(22) **Filed: Nov. 26, 2003****Related U.S. Application Data**(60) **Provisional application No. 60/429,370, filed on Nov.
26, 2002.****Publication Classification**(51) **Int. Cl.⁷ A61B 19/00**
(52) **U.S. Cl. 128/899**(57) **ABSTRACT**

Externally detectable electronic article surveillance markers are attached to surgical implements, such as sponges and surgical instruments, appointed for use in a surgical wound. The attachment mechanism facilitates detection by an external interrogating field before the wound has been closed and the patient has left the operating table. The markers are responsive to the imposition of an interrogating field produced by an electronic article surveillance system. Markers contain one or more magnetomechanically responsive elements that are urged into mechanical resonance by the interrogating field. The ring-down of the resonance and the associated dipolar electromagnetic field provide a signal-identifying characteristic detected by a detection system. Upon detection, an audible or visible signal is triggered to alert relevant medical personnel to the need for follow-up care and removal of the offending item. The resonance occurs at a frequency ranging from about 70 to 300 kHz. Misadventures during operative procedures—especially those wherein implements remain undiscovered at the time of surgery and are retained indefinitely within the surgical cavity, often entailing dire consequences to the patient—are virtually eliminated. The attachment mechanism and markers assure that surgical implements are reliably detected and removed before completion of the surgical procedure.





US 20040201479A1

(19) **United States**(12) **Patent Application Publication**
Garber et al.(10) **Pub. No.: US 2004/0201479 A1**(43) **Pub. Date: Oct. 14, 2004**(54) **APPLICATIONS FOR RADIO FREQUENCY
IDENTIFICATION SYSTEMS**(75) **Inventors:** Sharon R. Garber, Crystal, MN (US);
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Lindahl, Oakdale, MN (US); James E.
Nash, Bloomington, MN (US); Chester
Plotrowski, White Bear Lake, MN
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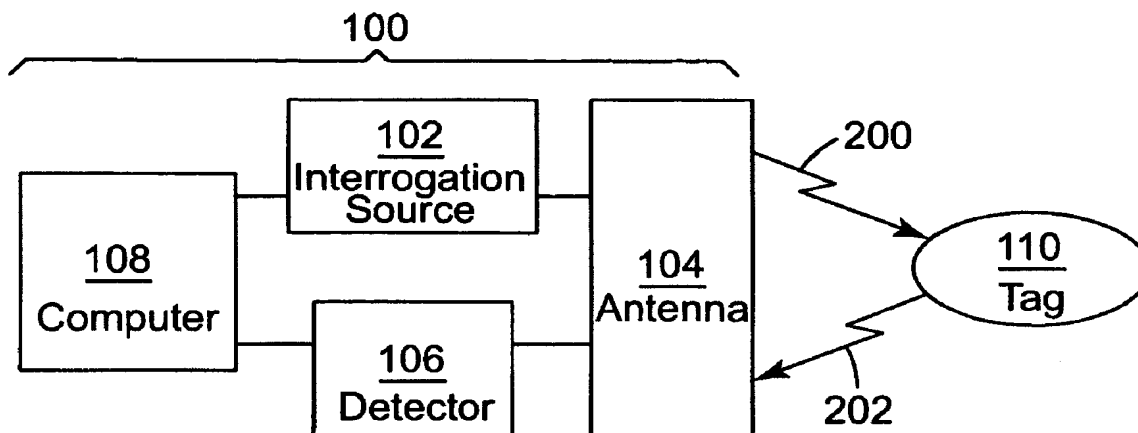
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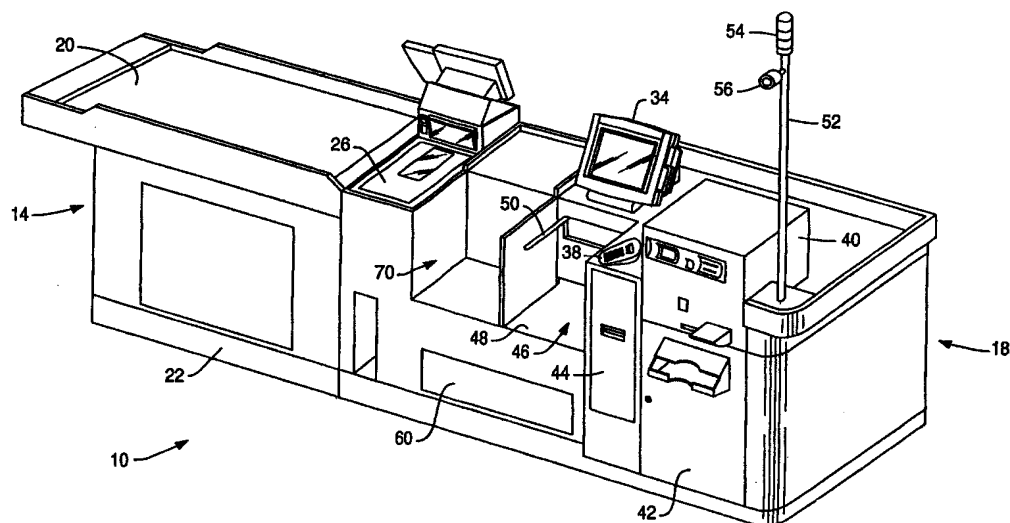
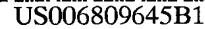
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ST. PAUL, MN 55133-3427 (US)**(73) **Assignee: 3M Innovative Properties Company**(21) **Appl. No.: 10/828,070**(22) **Filed: Apr. 20, 2004****Related U.S. Application Data**

(60) Division of application No. 10/152,255, filed on May 20, 2002, now Pat. No. 6,768,419, which is a division of application No. 09/619,220, filed on Jul. 19, 2000, now Pat. No. 6,486,780, which is a division of application No. 09/368,826, filed on Aug. 5, 1999, now Pat. No. 6,232,870, which is a continuation-in-part of application No. 09/344,758, filed on Jun. 25, 1999, now abandoned, which is a continuation-in-part of application No. 09/134,686, filed on Aug. 14, 1998, now abandoned.

Publication Classification(51) **Int. Cl.⁷ G08B 13/14**(52) **U.S. Cl. 340/572.1**(57) **ABSTRACT**

The present invention relates to RFID devices, including handheld RFID devices, and applications for such devices. The devices and applications may be used in connection with items that are associated with an RFID tag, and optionally a magnetic security element. The devices and applications are described with particular reference to library materials such as books, periodicals, and magnetic and optical media.







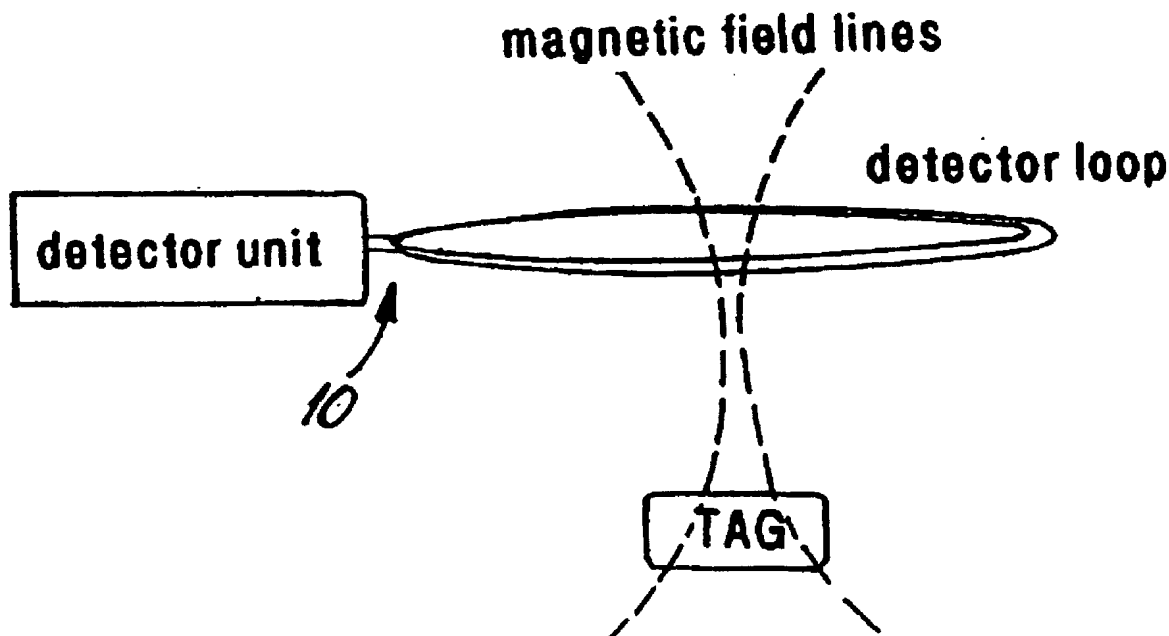
US 20040250819A1

(19) **United States**(12) **Patent Application Publication**
Blair et al.(10) **Pub. No.: US 2004/0250819 A1**(43) **Pub. Date: Dec. 16, 2004**(54) **APPARATUS AND METHOD FOR
DETECTING OBJECTS USING TAGS AND
WIDEBAND DETECTION DEVICE**(76) **Inventors: William A. Blair, San Diego, CA (US);
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(21) **Appl. No.: 10/810,623**(22) **Filed: Mar. 29, 2004****Related U.S. Application Data**(60) **Provisional application No. 60/458,222, filed on Mar.
27, 2003.****Publication Classification**(51) **Int. Cl.⁷ A61B 19/00**
(52) **U.S. Cl. 128/899**(57) **ABSTRACT**

An apparatus and method for the detection of objects in the work area such as surgical sites, including a detection tag affixed to objects such as used during surgery. The apparatus and method feature an interrogation and detection device with a transmitter for emitting pulsed wideband signals each including a signal prompting the tag element to provide a return signal, and a receiver for reception and analysis of the return signal from the tag element. Multiple pulse signals (of constant or varied height) emitted from the transmitter causes the return signals to build up in intensity at a detectable frequency above the ambient noise levels to facilitate detection of the tag element and object attached thereto. The device features an antenna portion containing a single or a plural ring-shaped antenna. Also, the pulsed wideband interrogation signal may be pulsed-width modulated or voltage-modulated, as two examples thereof.





US006861954B2

(12) **United States Patent**
Levin

(10) **Patent No.:** **US 6,861,954 B2**
(45) **Date of Patent:** **Mar. 1, 2005**

(54) **TRACKING MEDICAL PRODUCTS WITH INTEGRATED CIRCUITS**

(75) Inventor: **Bruce H. Levin**, 125 Broome La.,
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(73) Assignee: **Bruce H. Levin**, Marion Station, PA
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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 280 days.

(21) Appl. No.: **10/106,183**

(22) Filed: **Mar. 27, 2002**

(65) **Prior Publication Data**

US 2002/0143320 A1 Oct. 3, 2002

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/883,991, filed on
Jun. 20, 2001.

(60) Provisional application No. 60/280,206, filed on Mar. 30,
2001.

(51) Int. Cl.⁷ **G08B 13/14**

(52) U.S. Cl. **340/572.1; 340/539.12;**
606/1

(58) Field of Search 340/573.4, 573.1,
340/572.1, 539.12, 539.13; 604/362; 606/1

(56) **References Cited**

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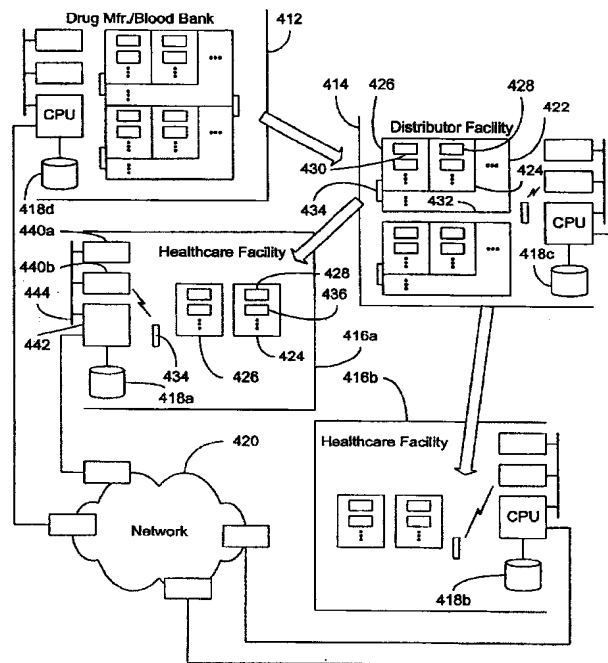
Primary Examiner—Thomas Mullen

(74) *Attorney, Agent, or Firm*—Kenyon & Kenyon

(57) **ABSTRACT**

A system and method of tracking medical products provides for associating a group of medical products with a group location based on a group radio frequency identification (RF ID) device signal, where the group includes a first unit and a second unit. The first unit is associated with a first remote location based on a first unit RF ID device signal. The method further provides for associating the second unit with a second remote location based on a second remote location based on a second unit RF ID device signal. The signals uniquely identify the units and the group.

27 Claims, 9 Drawing Sheets





US006900731B2

(12) **United States Patent**
Kreiner et al.

(10) **Patent No.:** **US 6,900,731 B2**
(45) **Date of Patent:** **May 31, 2005**

(54) **METHOD FOR MONITORING AND TRACKING OBJECTS**

(75) Inventors: **Barrett Kreiner**, Norcross, GA (US);
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Jonathan Peterson, Atlanta, GA (US);
Andre Jarboe, Acworth, GA (US);
Monique Simmons, Duluth, GA (US)

(73) Assignee: **BellSouth Intellectual Property Corporation**, Wilmington, DE (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 72 days.

(21) Appl. No.: **10/283,099**

(22) Filed: **Oct. 30, 2002**

(65) **Prior Publication Data**

US 2004/0085207 A1 May 6, 2004

(51) Int. Cl.⁷ **G08B 13/14**

(52) U.S. Cl. **340/572.1; 235/385; 705/28**

(58) Field of Search **340/572.1, 539.13, 340/825.49, 10.1, 5.92; 235/375, 385; 705/22, 28**

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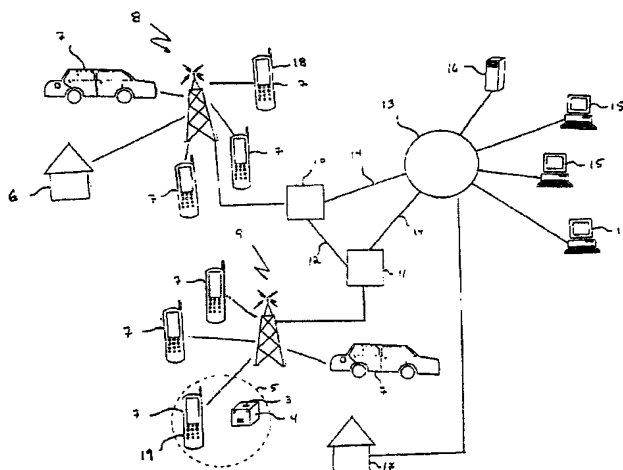
Primary Examiner—Thomas Mullen

(74) *Attorney, Agent, or Firm*—Bambi F. Walters, Esq.; Walters and Zimmerman

(57) **ABSTRACT**

The present invention relates to methods of tracking and monitoring objects in accordance with pre-selected and stored policies that are generated by the owner of the object. These policies define the parameters for determining when an object is lost, for reporting a lost object, and for searching for a lost object. When combined with a network tracking system, the policies can also set parameters for permissible areas in which the objects can be disposed and for tracking of the objects across the network.

9 Claims, 4 Drawing Sheets





US007010507B1

(12) **United States Patent**
Anderson et al.

(10) **Patent No.: US 7,010,507 B1**
(45) **Date of Patent: Mar. 7, 2006**

(54) **SYSTEM PROVIDING FUNDS TO
ELECTRONIC TAX FILERS PRIOR TO
RECEIPT OF REFUND**

(75) Inventors: **William P. Anderson**, Kansas City, MO
(US); **John M. French**, Sewickley, PA
(US)

(73) Assignee: **Block Financial Corporation**, Kansas
City, MO (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
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(21) Appl. No.: **08/539,110**

(22) Filed: **Oct. 4, 1995**

(51) **Int. Cl.**
G06F 17/60 (2006.01)

(52) **U.S. Cl.** **705/31; 705/35**

(58) **Field of Classification Search** 395/231,
395/201, 230; 705/31-44, 1, 30; 235/380
See application file for complete search history.

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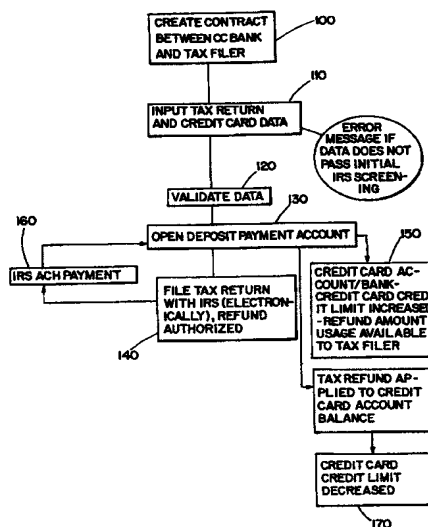
Primary Examiner—Frantzy Poinvil

(74) *Attorney, Agent, or Firm*—Standley Law Group LLP

(57) **ABSTRACT**

Electronic data processing system which enables tax filers
who electronically file tax returns to early use of their refund
amount through an increased credit card credit limit with the
tax payers credit card account.

13 Claims, 2 Drawing Sheets





US007019650B2

(12) **United States Patent**
Volpi et al.

(10) **Patent No.:** **US 7,019,650 B2**
(45) **Date of Patent:** **Mar. 28, 2006**

(54) **INTERROGATOR AND INTERROGATION
SYSTEM EMPLOYING THE SAME**

(75) Inventors: **John P. Volpi**, Garland, TX (US);
Jimmy D. Laferney, Frisco, TX (US);
William C. Montgomery, Rockwall,
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(73) Assignee: **Caducys, L.L.C.**, Dallas, TX (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 220 days.

(21) Appl. No.: **10/378,043**

(22) Filed: **Mar. 3, 2003**

(65) **Prior Publication Data**

US 2004/0174261 A1 Sep. 9, 2004

(51) **Int. Cl.**
G08B 13/14 (2006.01)

(52) **U.S. Cl.** **340/572.1; 340/572.4;**
340/520; 340/521

(58) **Field of Classification Search** **340/572.1,**
340/572.4, 572.7, 573.1, 573.2, 573.3, 573.4,
340/568.1, 571, 10.1, 520, 521; 235/382,
235/382.5; 342/27, 28

See application file for complete search history.

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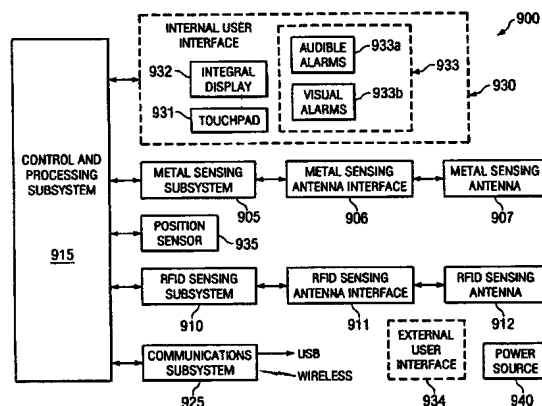
Primary Examiner—Van T. Trieu

(74) *Attorney, Agent, or Firm*—Slater & Matsil, L.L.P.

(57) **ABSTRACT**

The present invention is directed to an interrogator, method
of discerning metal and radio frequency identification
(RFID) objects, and an interrogation system employing the
same. In one embodiment, the interrogator includes a metal
sensing subsystem configured to provide a first signal having
a signature representing a presence of a metal object, and a
RFID sensing subsystem configured to provide a second
signal having a signature representing a presence of a RFID
object. The interrogator also includes a control and process-
ing subsystem configured to discern a presence of at least
one of the metal and RFID objects from one of the first and
second signals.

50 Claims, 11 Drawing Sheets





US007142118B2

(12) **United States Patent**
Hamilton et al.(10) **Patent No.:** **US 7,142,118 B2**
(45) **Date of Patent:** **Nov. 28, 2006**

- (54) **MANAGEMENT AND DISTRIBUTION OF SURGICAL SUPPLIES WITHIN AN RFID ENABLED NETWORK**
- (75) Inventors: **John A. Hamilton**, Tampa, FL (US);
Mary L. McCoy, Tampa, FL (US);
Charles Pope, Tampa, FL (US); **Joseph A. Largey**, Tampa, FL (US)
- (73) Assignee: **SRI/Surgical Express, Inc.**, Tampa, FL (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 86 days.

(21) Appl. No.: **10/873,783**(22) Filed: **Jun. 22, 2004**(65) **Prior Publication Data**

US 2005/0280536 A1 Dec. 22, 2005

- (51) **Int. Cl.**
G06Q 50/00 (2006.01)
G06F 7/06 (2006.01)
- (52) **U.S. Cl.** **340/572.1; 235/375; 377/5; 705/2; 700/215; 209/3.3**
- (58) **Field of Classification Search** **340/572.1, 340/5.9-5.92; 705/2, 22, 28-29; 235/375, 235/385**
- See application file for complete search history.

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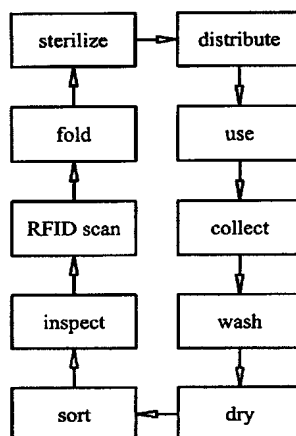
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Primary Examiner—Jeffery Hofsass*Assistant Examiner*—Anne V. Lai(74) *Attorney, Agent, or Firm*—Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd.(57) **ABSTRACT**

The present invention contributes to advancements in the art of inventory management and distribution by providing a system and method for processing, distributing, and tracking reusable inventory items. Reusable articles, such as surgical garments and accessories, are adapted with radio frequency identification ("RFID") tags having unique identification numbers. A "reader" is used to retrieve stored information from the tags without requiring direct contact or clear line-of-sight. The reusable articles are processed and distributed using an inventory management system wherein lifecycle data is obtained for each reusable article. The reusable articles are distributed to the end users from central processing facilities, used, returned, cleaned, inspected, folded, sterilized, and returned to inventory for re-distribution. Periodic quality control inspections are conducted in response to predetermined usage parameters. The use of RFID tags and a corresponding computer network allows for the acquisition of data corresponding to each reusable article within a distribution system having multiple remote distribution and processing facilities. The acquired data is transmitted to a central computer processing system via a secured wide area computer network for use and analysis. Data processing computer servers at each remote distribution and processing facility electronically linked to a central data processing server provide a fail-safe network for acquired data.

23 Claims, 6 Drawing Sheets



US007155402B1

**(12) United States Patent
Dvorak****(10) Patent No.: US 7,155,402 B1
(45) Date of Patent: Dec. 26, 2006****(54) METHOD AND APPARATUS FOR
DISTRIBUTION OF FASHION AND
SEASONAL GOODS****(75) Inventor: Robert E. Dvorak, Atherton, CA (US)****(73) Assignee: Bluefire Systems, Inc., San Francisco,
CA (US)****(*) Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 562 days.**(21) Appl. No.: 09/708,944****(22) Filed: Nov. 8, 2000****(51) Int. Cl.**
G06F 17/60 (2006.01)**(52) U.S. Cl. 705/10; 705/28****(58) Field of Classification Search 705/10**
See application file for complete search history.**(56) References Cited****U.S. PATENT DOCUMENTS**

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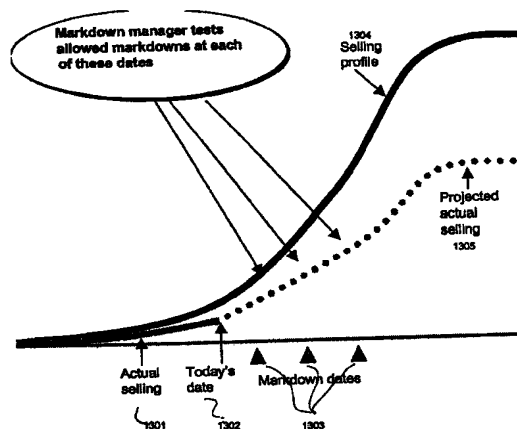
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(Continued)**Primary Examiner—Romain Jeanty****(74) Attorney, Agent, or Firm—Ernest J. Beffel, Jr.; Haynes
Beffel & Wolfeld LLP****(57) ABSTRACT**

One embodiment practicing aspects of the present invention provides a computer-implemented method for adjusting a reference selling profile for a reference product, comprising retrieving one or more reference selling profiles corresponding to daily or more frequent historical data for one or more reference products, and adjusting the reference selling profiles to correct for one or more promotions which impacted the historical data. Other embodiments and aspects provide for determining location distribution shares, projecting sales, determining distribution quantities, comparing alternative markdown scenarios, etc.

53 Claims, 14 Drawing Sheets



US007177829B1

(12) **United States Patent**
Wilson et al.

(10) **Patent No.:** **US 7,177,829 B1**
(45) **Date of Patent:** **Feb. 13, 2007**

(54) **TAX REFUND SYSTEM**

(75) **Inventors:** **Robert D. Wilson**, Shawnee, KS (US);
Mark A. Ernst, Mission Hills, KS (US)

(73) **Assignee:** **H & R Block Tax Services, Inc.**,
Kansas City, MO (US)

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/354,870**

(22) **Filed:** **Jul. 16, 1999**

(51) **Int. Cl.**
G06Q 30/00 (2006.01)

(52) **U.S. Cl.** **705/31; 705/30**

(58) **Field of Classification Search** **705/30,**
705/31

See application file for complete search history.

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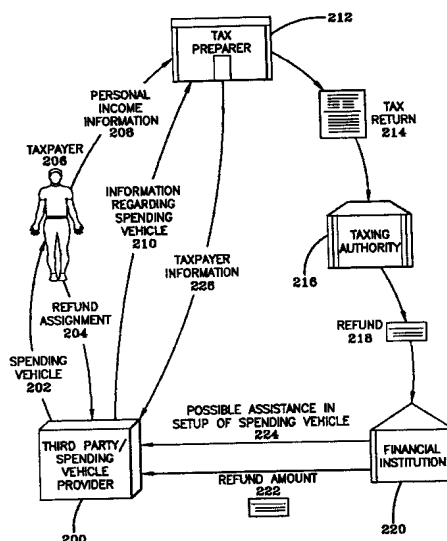
Primary Examiner—Joseph A. Fischetti

(74) *Attorney, Agent, or Firm*—Standley Law Group LLP

(57) **ABSTRACT**

A tax refund system is disclosed in which in exchange for a taxpayer assigning all or a portion of his or her tax refund, a participating provider provides to the taxpayer a spending vehicle with buying power at participating outlets. Tax return data for an individual's tax return is processed by the IRS. A taxpayer consents to using a portion of the tax return data to acquire a spending vehicle from a financial institution of the taxpayer's choosing. Using a portion of the tax return data, the IRS arranges to electronically transfer an amount related to the taxpayer's refund to an account at the financial institution selected by the taxpayer. A taxpayer then receives a spending vehicle such as a credit, debit, or cash card, spending account, coupon, or rebate from a financial institution or other spending vehicle provider such as a retailer, service provider, wholesaler, distributor, or entertainment entity.

6 Claims, 4 Drawing Sheets





US 20070093709A1

(19) **United States**(12) **Patent Application Publication**
Abernathie(10) **Pub. No.: US 2007/0093709 A1**(43) **Pub. Date: Apr. 26, 2007**(54) **SURGICAL NAVIGATION MARKERS****Publication Classification**(76) Inventor: **Dennis Lee Abernathie**, Columbia, MO
(US)(51) **Int. Cl.****A61B 5/05** (2006.01)(52) **U.S. Cl.** **600/407; 600/424**

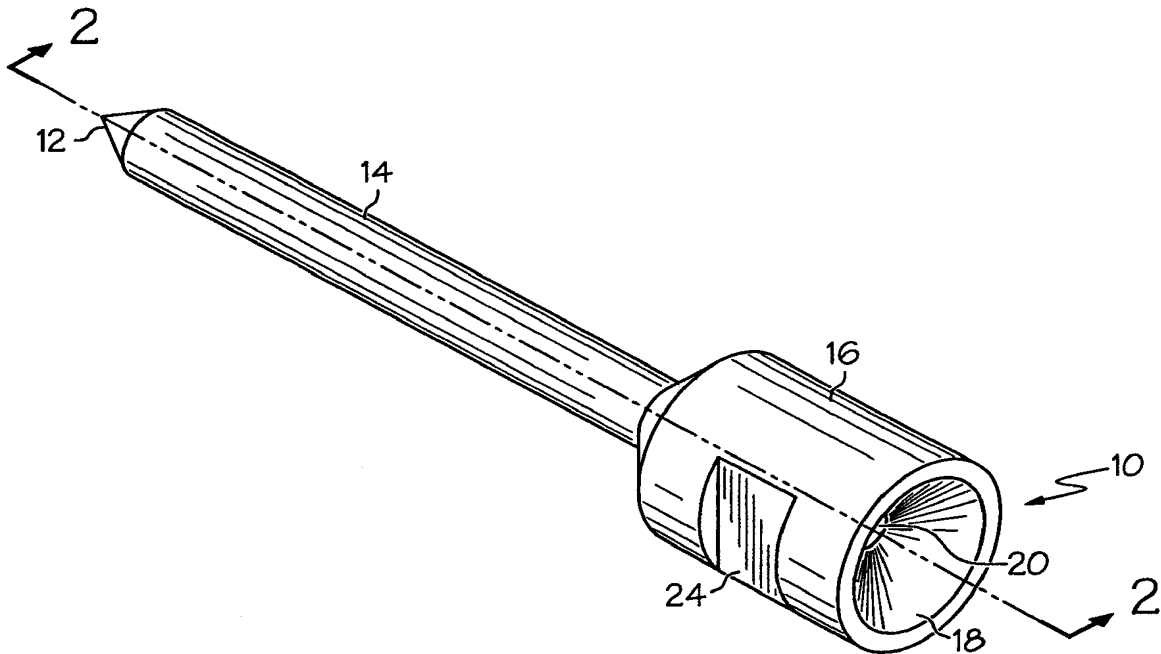
Correspondence Address:

R. Scott Kimsey**Sonnenschein Nath & Rosenthal LLP****Sears Tower, Wacker Drive Station****P.O. Box #061080****Chicago, IL 60606-1080 (US)**

(57)

ABSTRACT

The present invention provides a surgical navigation marker having a shaft with a head at one end and a point at the other. The point is adapted for easy insertion of the navigation marker in a portion of a patient's anatomy, such as bone. The head of the navigation marker has a depression formed therein that is sized and shaped for precise registration by an imaging or tracking system.

(21) Appl. No.: **11/258,697**(22) Filed: **Oct. 26, 2005**



US007307530B2

(12) **United States Patent**
Fabian et al.

(10) **Patent No.:** **US 7,307,530 B2**
(45) **Date of Patent:** **Dec. 11, 2007**

(54) **SURGICAL IMPLEMENT DETECTOR
UTILIZING A RADIO-FREQUENCY
IDENTIFICATION MARKER**

(76) Inventors: **Carl E. Fabian**, 5001 London Walk,
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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
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(21) Appl. No.: **11/055,348**

(22) Filed: **Feb. 10, 2005**

(65) **Prior Publication Data**

US 2006/0187059 A1 Aug. 24, 2006

(51) **Int. Cl.**
G08B 13/14 (2006.01)

(52) **U.S. Cl.** **340/572.1; 340/571; 340/572.4;**
340/572.8

(58) **Field of Classification Search** None
See application file for complete search history.

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Primary Examiner—Benjamin C. Lee

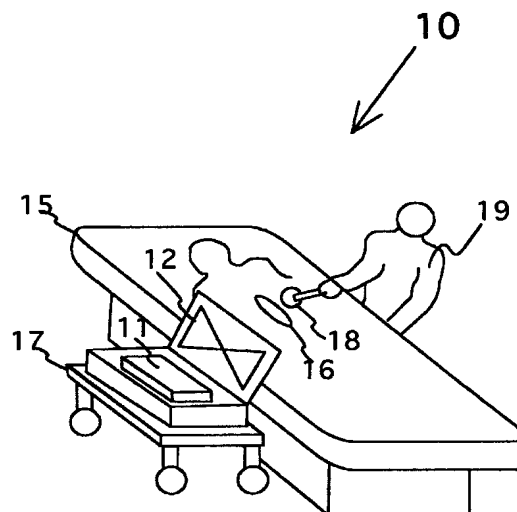
Assistant Examiner—Son Tang

(74) *Attorney, Agent, or Firm*—Ernest D. Buff & Associates,
LLC; Ernest D. Buff; Gordon E. Fish

(57) **ABSTRACT**

A radio-frequency surgical implement detection system detects surgical implements in a surgical wound during and at the completion of a surgical procedure. Surgical implements, including surgical sponges or laparotomy pads, gauze pads and metallic surgical instruments, are individually attached to a non battery-powered, encapsulated radio-frequency marker. The marker comprises an integrated chip having a burnt-in memory code, which is broadcast through an antenna using a modulated carrier frequency. The code is received by an interrogating antenna of a detector. The interrogating antenna provides a power pulse, which is received by the antenna of the radio-frequency marker. The power pulse charges a capacitor, which proves power for the read function, carrier frequency modulation function and broadcast function of the integrated chip, permitting each marker-containing implement to be specifically identified.

9 Claims, 6 Drawing Sheets





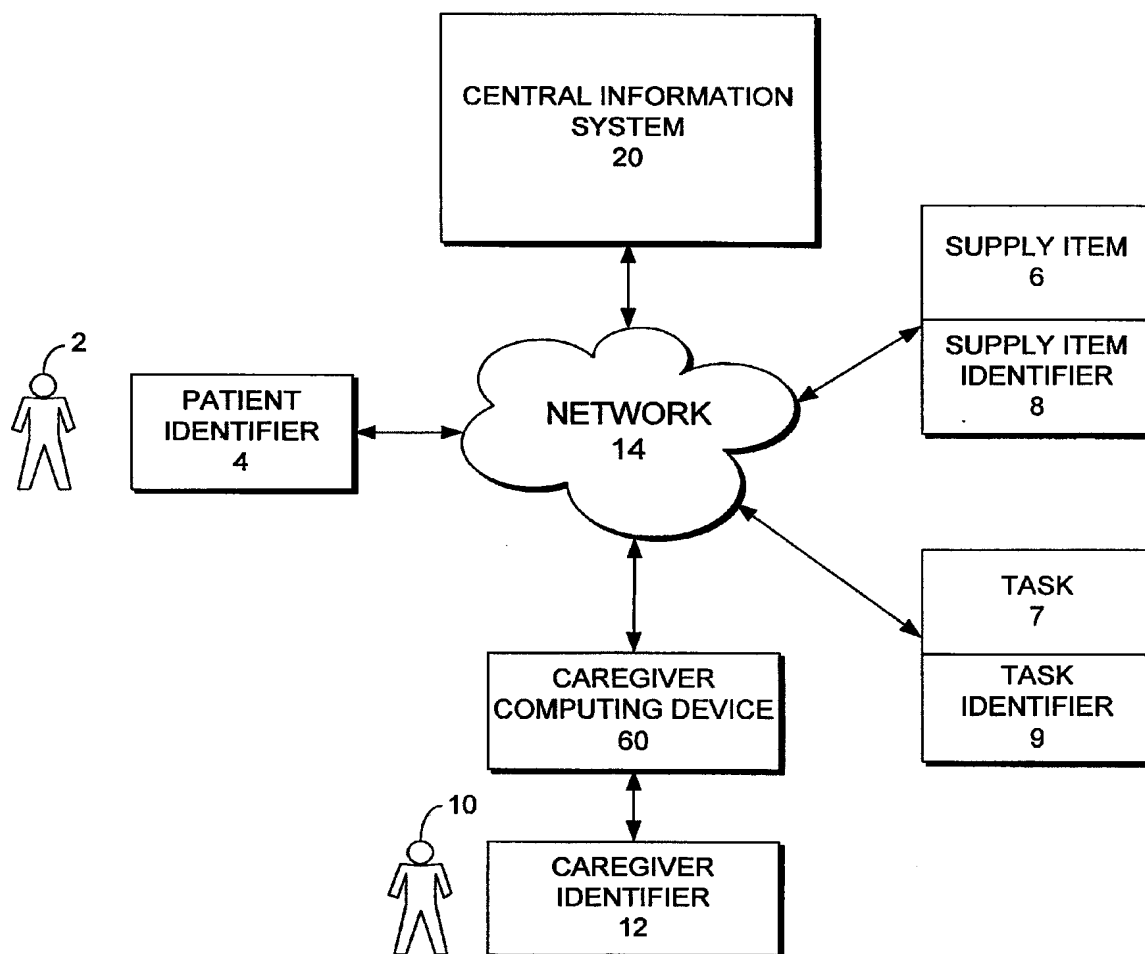
US 20070290030A1

(19) **United States**(12) **Patent Application Publication**
FOX et al.(10) **Pub. No.: US 2007/0290030 A1**(43) **Pub. Date: Dec. 20, 2007**(54) **UPDATING SUPPLY INVENTORY DATA TO
REFLECT THE USE OF A MEDICAL SUPPLY
ITEM FOR A PATIENT**(22) Filed: **Jun. 15, 2006****Publication Classification**(75) Inventors: **CHARLES S. FOX, LEAWOOD,
KS (US); DEBORAH J.
DURRELL, KANSAS CITY, MO
(US); KRIS KLINE, KANSAS
CITY, MO (US); DAMON
HERBST, SHAWNEE, KS (US)**(51) **Int. Cl.**
G06F 17/00 (2006.01)
G06K 5/00 (2006.01)
G06Q 30/00 (2006.01)
G06Q 20/00 (2006.01)(52) **U.S. Cl. 235/375; 235/380; 235/385; 705/23**

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Intellectual Property Department
2555 GRAND BOULEVARD
KANSAS CITY, MO 64108-2613(73) Assignee: **CERNER INNOVATION, INC.,
OVERLAND PARK, KS (US)**(21) Appl. No.: **11/424,391**(57) **ABSTRACT**

A system and method in a computerized healthcare environment for updating supply inventory data to reflect the use of a medical supply item is provided. A patient identifier identifying a patient and a scanned supply item identifier identifying a supply item for use for the patient are received. Use of the scanned supply item in a supply item is indicated in an inventory database.





US007557710B2

(12) **United States Patent**
Sanchez et al.

(10) **Patent No.:** **US 7,557,710 B2**
(45) **Date of Patent:** **Jul. 7, 2009**

(54) **SYSTEM FOR TRACKING SURGICAL ITEMS
IN AN OPERATING ROOM ENVIRONMENT**

(75) Inventors: **Michael Sanchez**, Helotes, TX (US);
James Parker, San Antonio, TX (US);
James Ross, Montgomery Village, MD
(US); **Charles Beason**, San Antonio, TX
(US); **Thomas Dayton**, San Antonio, TX
(US)

(73) Assignee: **Med Wave, LLC**, San Antonio, TX (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 297 days.

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(Continued)

(21) Appl. No.: **11/646,170**

(22) Filed: **Dec. 27, 2006**

(65) **Prior Publication Data**
US 2007/0268133 A1 Nov. 22, 2007

Related U.S. Application Data

(60) Provisional application No. 60/783,096, filed on Mar.
17, 2006.

(51) **Int. Cl.**
G08B 13/14 (2006.01)
G08B 5/22 (2006.01)
G08B 1/08 (2006.01)
G06F 19/00 (2006.01)
G06F 7/00 (2006.01)

(52) U.S. Cl. **340/572.1**; 340/5.92; 340/825.49;
340/539.13; 235/385; 700/215

(58) **Field of Classification Search** ... 340/572.1-572.9,
340/5.92, 825.49, 539.13; 235/385; 700/215,
700/224, 225, 226

See application file for complete search history.

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Primary Examiner—Daniel Wu

Assistant Examiner—Mark Rushing

(74) *Attorney, Agent, or Firm*—Kammer Browning PLLC

(57) **ABSTRACT**

A system for tracking and locating surgical items and objects in an operating room environment that incorporates two-stage functionality. A first stage provides mechanisms for tracking objects using radio frequency (RF) tags that are positioned on or in conjunction with every surgical item and object so as to be tracked by a number of RF transceivers located about the operating room. In addition to integrating RF ID components, the tags integrate hard spherical components that are easily identifiable by ultrasonic detection. If an object is "lost" from the tracking system functionality (RF tracking), the system operator may review a last known location and movement path presented on a display and thereafter utilize an ultrasonic sub-system in a localized area to detect the exact location of the missing object or item. Narrowing the location of a "lost" object is facilitated by the use of one or more LED laser pointers that are directed through the last known path of the object and to its last known location.

18 Claims, 5 Drawing Sheets

